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ORIGINAL ARTICLES.

REST IN THE TREATMENT OF DISEASES OF THE HEART.

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For years it has been my custom, both in practice and in teaching, to insist upon absolute rest in bed in cases of heart disease with destroyed compensation. My opinion was based upon the consideration that the only period of rest enjoyed by the heart was during diastole, and since the heart beats more slowly in a recumbent than in an erect position or during exercise, the diseased heart should be encouraged to beat slowly. Moreover, I was supported in my belief by the statements of such weighty authorities in medicine as Balfour and Liebermeister. The latter has reported an instructive case of a business man who had a serious valvular lesion, and who every now and then overstrained his heart to the point of threatened loss of compensation. He would enter the hospital and after three or four days of treatment and upon relief of his most urgent symptoms would again take to his business, in spite of all Liebermeister could say to the contrary. One day this patient suffered a fracture of the femur, which necessitated rest in bed for six weeks; and Liebermeister stated that this prolonged rest did more for the patient's heart than anything else could have done.

A few years ago a German physician reported a series of cases of valvular disease in which the only treatment employed was rest in bed and the milk diet. The results were highly satisfactory. I am sure that in my own experience I have seen great benefit follow prolonged physical repose. Imagine, then, my surprise recently upon perusing Fraentzel's valuable work on heart disease to run across a very positive statement that he considered absolute physical rest injurious and had seen unmistakable harm result therefrom. This, according to him, is particularly the case in "idiopathic enlargement of the heart," although he denounces absolute rest even in valvular disease. He cites in support of his position the fact that striped muscle degenerates when deprived of the stimulus of exercise, and since the heart muscle is striated, like voluntary muscle fibers, the cardiac muscle wili degenerate under prolonged rest. In cases of enlarged hearts, secondary to arterio-sclerosis, the injury has been rapid and unmistakable while there was an evident increase of the atheroma.

Naturally this set me to thinking, and I recalled at least two cases of Fraentzel's "idiopathic enlargement of the heart" both in corpulent men, with large chests, in which the absolute rest in bed insisted upon was not followed by relief of symptoms. In fact, in both cases, cardiac failure was progressive and more rapid than was expected; death ensuing within three weeks. Having witnessed unmistakable improvement in other cases, and not having attributed the rapid increase of symptoms in the two cases just mentioned to the effect of entire rest, I have been led to question if the positions taken by Liebermeister and Fraentzel may not both be correct. In other words; may not rest be beneficial to some—disastrous to others? Furthermore, is the reason given by Fraentzel the correct one? It seems to me not. The heart muscle, although composed of striated fibers, is not like voluntary muscle, inasmuch as the cardiac muscle can never during life be subjected to absolute inaction. Its contractions are intermittent and unceasing, and therefore in its period of diastole, time is not given for degeneration as in prolonged inaction of a voluntary muscle. It seems to me the injury to the heart results from other causes which lie in the circulation outside of the heart itself. The chief factor in the maintenance of the circulation is the difference between pressures in the aorta and in the two venæ cavæ, that within these great venous trunks being negative. When the left ventricle becomes weakened and dilated, less blood is thrown with each contraction into the aorta, and blood pressure falls; the normal difference between arterial and venous pressure diminishes and the circulation suffers in consequence. If now the patient be put to bed, venous flow is still further retarded in consequence of the cessation of muscular movements on the one hand, and on the other of decreased aspiration of the blood out of the great veins into the thorax, consequent upon more quiet and shallow respiration. Consequently, the work of maintaining the circulation is thrown mainly upon the already weakened heart. It would not be strange under these conditions if the weakened, nay perhaps degenerated cardiac muscle should suffer still more in its integrity. Having, unaided, to pump the blood onward, the heart walls stretch still more, and the condition called by the French, asystole, grows more and more apparent.

Furthermore, in cases of arterio-sclerosis, under lessened physical exercise, there is diminished oxydation, together with an increase of these conditions within the venous system, thought by Fraenkel and others to favor the development of atheroma, and hence the marked increase of this vascular change observed by Fraentzel might very well be the case. These conditions appear to me to explain in great part at least the injurious effect of absolute rest in cases of cardiac dilatation without valvular disease, or of general fatty degeneration.

Unquestionably, moderate physical exercise, as quiet walking on level ground, serves as a beneficial

stimulus to the heart muscle, even when diseased. But since this beneficial effect may so easily be counteracted by the increased dilatation, produced by muscular effort, I am of the opinion that a judicious combination of both exercise and rest is indicated in these cases.

Let us now consider the various valvular lesions coming under daily observation, and whether or not there are any conditions rendering Fraentzel's position untenable in these cases. By valvular disease is meant either stenosis of the orifice or insufficiency of the valves. Pathologically these two conditions are probably always united but in varying proportions. Therefore we recognize clinically the preponderating condition and I shall here consider, separately, stenosis and regurgitation. In mitral stenosis there is practically a dam built across the blood stream at the point of the left auriculo-ventricular opening The blood can not escape from the auricle as rapidly as it is sent into it from the right ventricle. There is permanent congestion back of this pathological obstruction; increased work is thrown upon the left auricle and the right ventricle,which consequently undergo compensatory hypertrophy. So long as the chambers are adequate to increased work the cardiac contractions are slow and the lengthened diastole allows adequate filling of the left ventricle. Moderate muscular effort is unattended by urgent symptoms. So soon as compensation is lost, that is, dilatation preponderates over hypertrophy, cardiac action becomes more rapid, mainly at the expense of diastole, and the weakened right ventricle and left auricle are unable during the shortened diastole to drive sufficient blood through the constricted orifice to adequately fill the left ventricle. This chamber in turn throws a smaller volume of blood into the aorta and arterial pressure falls correspondingly with consequent retardation of the circulation. If, now, rest be prescribed the resulting fall in the rate of cardiac contractions allows more time for the filling of the left ventricle, while at the same time venous blood is forwarded to the heart less rapidly. As a result of these conditions the left ventricle, unimpaired in its contractility, receives and discharges a larger amount of blood into the arterial system. Something like the normal difference between arterial and venous pressure is restored and the circulation correspondingly improved. Thus relieved of strain, opportunity is afforded the heart to respond to proper medication and to regain its lost compensation.

In mitral regurgitation the obstacle to the circulation through the heart is intermittent. With each ventricular systole a portion of the blood intended for the aorta is thrown back into the auricle. This chamber, thus receiving the blood from two directions at once, becomes momentarily surcharged, but the next instant discharges its contents into the ventricle and its distension is relieved. In the stage of destroyed compensation it is important that blood be not forwarded to the heart and lungs with undue rapidity, lest the left auricle be over-distended and its ability to withstand the regurgitant stream be still further impaired. The mitral valves, being incompetent, their place has to be taken by the walls of the left auricle and the mass of blood this chamber contains. If compensation be lost, not only is the regurgitation the greater, but the contractility of the left ventricle is lessened and a proportionally smaller volume of blood is thrown into the aorta. A fall in arterial pressure and a slowing of the circulation result. If the integrity of the left ventricle be not too greatly impaired, and the rest be not too prolonged the employment of this therapeutic agent, together with cardiac tonics will unload the distended left auricle, augment its power of resisting the regurgitant stream and enable the better filled ventricle to discharge a larger proportion of its contents into the aorta. Moreover, the cessation of muscular movements lessens intra-cardiac blood pressure, which is raised by the constriction of the arterioles lying within the area of the contracted muscles. Peripheral resistance to the outflow from the ventricle is diminished and the degree of regurgitation thereby relatively lessened. For a time, then, absolute rest is beneficial, but if too long maintained again may prove hurtful, through the added work put upon the left ventricle and the consequent increase of the regurgitation.

Consequently, in this form of mitral disease, rest should be employed with more caution than in stenosis. There are conflicting indications for and against rest. It should not be continued beyond relief of the first urgent symptoms. Moderate exercise about the room should then be permitted, at first for a few moments at a time, subsequently for increasing periods. In aortic disease there are still other facts to be considered; loss of compensation does not so much mean retardation of the venous flow and over-distension of the heart, as the danger of sudden diastolic arrest, particularly in aortic regurgitation. The enormously enlarged ventricle throws an abnormally great volume of blood with each systole into the arterial system. If arterial tension be increased, the reflux into the dilated ventricle is correspondingly increased. Muscular effort, however slight, augments blood pressure within the arterial system. Therefore, that our efforts to reëstablish compensatory hypertrophy upon the part of the left ventricle may be successful, physical rest should be enjoined in the hope of thereby lessening those conditions that favor regurgitation into and distension of the left ventricle.

Moreover, as Balfour so forcibly states, the distending force of the regurgitant stream is increased in the upright position in accordance with Pascal's law, that the distending force "is equivalent to the weight of a column of blood of the height of the cranium above the heart and of the diameter of the ventricular lumen."

When compensation is destroyed, dilatation is greater, that is, the lumen of the left ventricle is increased and the weight of the distending column corresponds to its enlarged diameter. This consideration alone furnishes sufficient reason for insisting upon the supine position, when the left ventricle has lost its compensation.

I well remember the case of a woman, suffering from general edema from relative insufficiency of the mitral valves, secondary to loss of compensation of a long standing aortic regurgitation, in whom a two weeks' rest in bed, and proper medicinal treatment effected an entire removal of the symptoms. Although repeatedly warned against rising and making sudden effort, she one day left her chair to which she had been allowed cautiously to resort, and stepped forward to open the door in answer to a knock. The next instant she fell dead.

In stenosis of the aortic orifice, compensation fails

when dilatation of the left ventricle surpasses hypertrophy, and the ventricle is no longer able to force its contents past the obstruction. In such an event rest seems to me indicated for two reasons: 1, that the action of the heart may be slowed, thereby time given for the slowly contracting ventricle to discharge more blood into and raise the pressure within the arterial system; and 2, that the stream of blood be not forwarded to the heart under the influence of exercise more rapidly than it can be disposed of by the weakened ventricle.

Such are the considerations which lead me to take exception to the injunction laid down by Fraentzel, against the employment of rest in valvular lesions of the heart. Moreover, they are in accordance with the results of my own experience.

There are still other forms of cardiac disease in which the employment of rest becomes a vital question; of these, fatty degeneration, whether acute or chronic, and parenchymatous degeneration in the course of diphtheria and other infectious diseases are important. If symptoms of cardiac failure are urgent, it seems to me that absolute physical rest can not but be at least temporarily beneficial, although when too prolonged the heart might suffer from the very want of these accessory forces in the circulation furnished by carefully regulated exercise.

Bradycardia, on the other hand, would seem to indicate exercise rather than rest, because of the stimulus to the heart's contractions arising therefrom. Tachycardia of a functional or paroxysmal nature ought theoretically to be favorably affected by the removal of muscular effort, as well as of those emotional disturbances which serve to stimulate cardiac contractions. Heart rest seems imperatively called for, and how can this be accomplished except through a lengthening of the diastole or period of heart repose; and with the slowing down of the heart usually accomplished by bodily quiet, a relative increase in the diastolic period results. Moreover, with the slowing down of the heart, blood pressure within the aorta, which sinks in consequence of the rapid and ineffectual systoles is again raised with corresponding improvement in the circulation. Should the rate of the pulse remain unaffected by absolute physical rest there can be no object in its continuance. In acute affections of the heart, such as simple endocarditis, it seems to me there can be no question as to the beneficial influence of rest in bed.

As Fothergill points out, concerning the use of digitalis, the increased action produced by exercise causes more forcible closure of the valves and thereby subjects them to greater strain; the violence of the inflammatory process is certainly increased and the growth of connective tissue favored. Furthermore, simple endocarditis is observed most frequently with inflammatory rheumatism, and Sibson has shown that, if entire rest be employed during a rheumatic attack, the liability to endocarditis becomes very much less. These considerations are so patent as to make superfluous further remarks upon the beneficial effects of this therapeutic agent.

Although this paper concerns the therapeutic uses of rest in heart disease, a few words may not be amiss upon the kind of exercise to be allowed. This should be moderate, as a rule, in all forms of cardiac disease, however complete the compensation. Although patients with aortic insufficiency are sometimes capable of great muscular effort this is always dangerous. When compensation has failed or is threatened, exercise for the most part should be limited to short walks upon the level ground. They should never be extended to the production of decided fatigue, and stair climbing should be absolutely interdicted. We have heard much of the Oertel method; but experience has clearly demonstrated that mountain climbing is only admissible before compensation has been lost. Likewise Swedish movements, so highly praised by Fraentzel in some cases, and the light gymnastics forming a part of the Schott method are to be chiefly employed in those cases where compensation is still maintained. Nevertheless, in some instances, Schott's exercises as well as Swedish movements seem to be of positive value in restoring compensation. But if cardiac failure be marked, quiet walking and driving must be absolutely the only exercise permitted, and this should be followed by a short period of bodily rest. Fraentzel never allows his cardiac patients to walk in less than four hours after a meal; a most useful injunction.

Conclusions—1. The position taken by Fraentzel, that rest is injurious in the treatment of all forms of heart disease is untenable, and the reasons he assigns are incorrect.

2. Prolonged rest is detrimental, undoubtedly, in cases of enlargement of the heart without valvular disease, particularly if secondary to arterio-sclerosis, and in cases of fatty or other degeneration of the cardiac muscle.

3. The cause, however, lies in the circulation outside of the heart and not, as stated by Fraentzel, in the liability of cardiac, like striped voluntary muscle, to degenerate as a result of prolonged inaction, since the heart muscle can not during life be subjected to complete repose.

4. When compensation has become destroyed in valvular lesions of the heart, particularly mitral stenosis and aortic incompetence, rest is indicated theoretically and is beneficial in practice.

5. Bradycardia would theoretically contra-indicate prolonged rest.

6. On the other hand, it is called for in paroxysmal tachycardia, but should not be maintained, after having shown its powerlessness to affect the heart rate.

7. Acute inflammatory or degenerative affections of the heart indicate rigid rest in the recumbent position.

Venetian Building.

THE RELATION OF THE STUDY OF PATHOLOGY TO THE HIGHER MEDICAL EDUCATION.

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In speaking upon this purely scientific subject, I shall try to avoid as far as possible, technical terms and expressions so as to make my remarks intelligible and I hope interesting to our youngest undergraduates, although naturally such a topic appeals more strongly to graduates and advanced students.

Our subject is a most important one and worthy of the most careful consideration, both on account of its intrinsic importance and also on account of the rapid change in medical opinion as to its place in the college curriculum.

To illustrate this latter phase of the subject, let us compare the changes in the teaching of our best colleges since 1880.

Take, for instance, the College of Physicians and Surgeons of New York, a college which then enjoyed and has since maintained a foremost place among our medical colleges by virtue of its high standards and progressive methods. At that time the course in pathology necessary to the degree of M.D. at this college would at the present time seem ridiculous, but it then fairly represented the demands of the most advanced medical educators of that time.

The didactic instruction in pathology was given by the chair of Practice of Medicine, and covered the pathology of those diseases lectured on in the annual course, illustrated at times by the demonstration of fresh and preserved specimens. There were no especial lectures upon pathology, and general pathology was only taught as it came up in relation to other subjects in the course on medicine. There was no obligatory instruction in laboratory work or *post-mortems*.

The passing of the examination in practice of medicine was the only requisite for the degree of M.D. as far as pathology was concerned. However, even at this time the studious undergraduate could secure thorough instruction in pathology at this institution, as first class courses in pathologic histology were given by Dr. T. M. Prudden in the laboratory of the Alumni Association, and frequent *post-mortems* were available at the New York and Bellevue Hospital. How greatly all this has changed can be seen by glancing over the present schedule of the same college.

In the recently established four years' course there is demanded in addition to attendance upon lectures and *post-mortems* about one hundred hours of laboratory work in pathology; fifty hours in bacteriology and thirty-two hours in clinical microscopy, besides optional courses in pathology, bacteriology and original research. This calls for about eighty hours didactic work and one hundred and eighty hours in the laboratory, which can be supplemented to any extent by any student desiring especial instruction in these subjects.

These changes are still more noticeable in the schedules of some of the other schools, which apparently wish to atone for past laxness by present severity in their demands.

Instances might be multiplied, showing approximately the same changes of schedule in other colleges during the past ten years as those mentioned, but I think this unnecessary as the facts are well known.

In regard to the intrinsic importance of the study of pathology to those who wish anything that can be fitly called a medical education, it is only necessary to consider the importance of the subjects included under this term, pathology.

During the first two years of the medical student's course, his time and attention are largely taken up by those fundamental branches, anatomy and physiology with the related laboratory work in normal histology and embryology, and medical education without a thorough comprehension of these subjects would be indeed a farce. Now what anatomy and physiology are to the foundations of a medical education, so is pathology to the complicated superstructure which modern ideas demand, to complete and adorn the modern physician's education.

The term, pathology, is very comprehensive, combining the morbid counterparts of anatomy, physiology and normal histology with the complicated subject of bacteriology woven in—that is to say, the department of pathology includes morbid anatomy, the gross anatomic changes caused by disease; morbid or pathologic histology, the microscopic changes in the tissues due to injury or disease, including the constitution of neoplasms; morbid physiology, a most important part of the subject and one much neglected, which treats of the alterations of function caused by disease, with their origin and results.

Bacteriology while it may be classed under the general department of hygiene is, I think, more practically and profitably taught in connection with pathology. This subject has become such an important factor in the etiology, prognosis and treatment of disease that its thorough study has become an immense undertaking, and there seems to be a tendency in some quarters to over-rank its importance in the college curriculum, making what is really only a part of pathology greater than the whole, and compelling students to spend much more time on this branch than is really justifiable when its true position is considered.

In addition to these distinct divisions of the general subject, there should be included in this department the subject of clinical or microscopic diagnosis, which covers a grouping together for diagnostic purposes, of the facts and technical methods of pathologic histology, bacteriology and to a certain extent those of chemistry. This work is the connecting link between the laboratory and the clinic, applying the most exact instruments and laboratory methods to the living patient, not infringing on but supplementing the work of the physical diagnostician. After this exposition of the scope of pathology, and remembering the constant progress that is being made by hosts of earnest workers, you can better appreciate its importance as a basis of the higher medical education.

Students, I find, are apt to consider this study as a purely scientific ornament in their college course, as contrasted with the more practical branches dealing directly with the practice of medicine and surgery, and are apt to begrudge the time and hard study needed to master its difficulties.

This is a great mistake which will be fully realized only after graduation, for an intelligent understanding of the etiology, symptoms, prognosis and treatment of most diseases, can only be obtained by thoroughly informing one's self of their pathology.

To be in close touch with the medical spirit of the times, a thorough and exact knowledge of the facts of pathology is absolutely necessary, for one can not read intelligently any number of one of our better medical journals without depending upon his knowledge of both the theory and laboratory methods of this science. To illustrate, let me cite a few cases familiar to many of you, showing the relation of recent pathologic discoveries to practical points in medicine.

First as to etiology: What can be more important than the flood of light shed upon tuberculosis, and the now obsolete scrofula by Koch's discovery of the tubercle bacillus? Our present familiarity with the results of this discovery lead us to forget that thirteen years ago the cause of tuberculosis was unknown. Now we have a sure means of diagnosis in the mi-

croscopic examination of sputum, tissues, etc., and perhaps nearly as reliable a one in subjecting the suspected case to the injection of tuberculin. The use of this product of the growth of the tubercle bacillus as a curative agent in human tuberculosis is at present under a cloud, partly I think, owing to the great lack of good judgment on the part of the general medical public who rushed into its use headlong on all sorts of unsuitable cases, and then rushed into the press to condemn the remedy but not their own folly.

I have not the slightest doubt that tuberculin has proved of the greatest value in many properly selected cases, and believe that in the near future this substance will be so modified and its use so perfected as to furnish us with a most valuable remedy. Tuberculin is now proving to be of great value to the common health by its use as a diagnostic agent in the detection of tuberculosis in cattle. It is used extensively by veterinarians and health officers in the condemnation of tuberculous animals and the results are no longer questioned.

The debt of preventive medicine to Robert Koch can scarcely be over-estimated. The placing of tuberculosis among the infectious diseases, and thus among the preventable, was a tremendous stride forward in the interests of health, although we can not as yet read the full benefit of this discovery because of the lax medical education of the past. Neither the medical nor the general public are as yet thoroughly educated on this subject, and until they are, the more thorough preventive measures can not be put in force.

The problem of the proper sanitary handling of a case of chronic infectious disease often lasting for years, during the greater part of which the victim is able to be about, attend to business, travel in public conveyances and attend places of amusement is truly a difficult one; but with a general knowledge of the facts in the case public sentiment will demand and receive protection.

Every medical man of the present day should be a public educator on all matters pertaining to hygiene, and especially on this subject of the transmission of tuberculosis, and by united action the time will soon come when every consumptive in the land will understand the facts and believe that he is a menace to his friends and the general public through his sputum and excreta, and then at least it is fair to presume that some decided progress will be made in the prevention of tuberculosis.

Another striking instance of the value of pathologic research is seen in the elucidation of the causes of tetanus and lockjaw. The discovery of a bacillus only flourishing when deprived of oxygen and existing in our street dirt and garden soil, explained many facts which had long puzzled the clinicians, and showed clearly how the rusty nail and toy pistol cap could initiate so deadly a disease. The study of this germ and its life habits have again contributed to the prevention of disease by teaching that the open treatment of suspected wounds makes the least favorable conditions for the growth of this germ, which laboratory research has shown can only flourish in the absence of oxygen. Here, again, germ products are of avail in therapy, as Brieger has elaborated a substance for injection which is said to cure tetanus. In general, it may be said that there is a fair prospect of an entirely new therapy coming into use based wholly on laboratory study of the various pathogenic bacteria, each disease being combated by the use of substances elaborated by the growth of its causative germ, either in the laboratory pure culture or in a suitable animal. To illustrate: Pneumonia has been treated by a substance obtained from the blood of an animal which has just recovered from the disease, the theory being that the injurious effect of the growth of the germ in the body is finally combated by a so-called antitoxin elaborated by the living body, which first checks the growth of the germ, then kills it and so brings the disease to an end. By taking the blood serum from such an animal just convalescent, and injecting it into another suffering with the same disease, the morbid process is quickly brought to an end.

These blood serum and antitoxin methods bid fair to enrich our therapeutic resources greatly, but if their use should ever become general the cause of the higher medical education would be greatly advanced, because as many of these substances are most virulent poisons a false diagnosis might cause very disastrous results, and the general public would have to be a little more careful than they are at present in choosing their medical advisers.

Another important and interesting discovery not in the line of bacteriology is that of the amœba coli with its etiologic relations to hepatic abscess and dysentery. In all medical text-books for years the clinical fact has been stated that abscess in the liver followed certain cases of dysentery, but it was only a few years ago that the laboratory of the Johns Hopkins Hospital furnished the proof that a small animal parasite was the cause of both conditions.

The recent study of the plasmodium malariæ has furnished an invaluable means of diagnosis, by the examination of the blood, between typhoid and malarial fevers, and incidentally has made the classic treatment of malaria by quinin, scientific instead of empirical, by showing that very weak solutions of this drug are fatal to the plasmodia.

Illustrations of the debt owed by clinical medicine to pathology are so numerous that a mere enumeration of the non-striking ones would consume all the alloted time; hence I will speak of but two more: 1, as to the terrible disease, diphtheria—you doubtless all know something of this most treacherous disease, and the more experienced have noted the strange variability in its virulence. Laboratory workers have shown much in explanation of these variations. They have demonstrated, first that true diphtheria is due to the Klebs-Löffler bacillus, but that a similar disease clinically indistinguishable may be caused by other bacteria. In general they have shown that the disease caused by the Klebs-Löffler bacillus is more serious than the pseudo-diphtherias and hence to be carefully differentiated from a sanitary standpoint.

As this may be clinically very difficult, and at times impossible, they have carefully elaborated a method of diagnosis by culture which is now in use by the Board of Health of the city of New York. Physicians are furnished with sterilized test-tubes containing swabs, with which they touch the exudate in their patients' throats, replace in the stoppered test tube and return to the Health Department where cultures are rapidly made by bacteriologists and the result reported within twenty-four hours.

This is a very important advance in the interests

of public health, for when properly carried out it insures a two days' quarantine of all suspicious cases, which practically means all sore throats with any form of exudate, as the bacteriologist has proved that true diphtheria may so closely resemble a mild lacunar tonsillitis as to be indistinguishable by the best clinician, although you will still find some of the older if not wiser men at our medical societies who insist "that *they* can always diagnose diphtheria without fail, although they can not teach others how to do it."

Any precautions leading to the early diagnosis, and thus to a limitation of the spread of so fatal a disease are of the greatest value, and it is to be hoped that the near future may see the extension of these methods into our own city.

Another instance, this time in the line of bacterial therapy, but on a different principle from those already mentioned, is the use of the germ and toxins of erysipelas as a curative agent.

The remarkable effect upon various chronic disorders of an attack of accidental erysipelas has been noted for a good many years, and since so much attention has been paid to bacteriology much experimentation has been done in this line, in using the pure culture as a means of mitigating the disease. Local tuberculosis, syphilitic lesions and diphtheria are reported to have been thus cured.

Within the last few years Dr. Coley, of New York, has determined by experiments that an attack of erysipelas has a certain inhibitory or even curative power over malignant tumors, and some of his reported results are truly remarkable. Both carcinomata and sarcomata have shown some favorable results, but, on the whole, the latter seem to be the more favorable subjects for this treatment, which consists of the induction of an artificial erysipelas in the subject of an inoperable malignant tumor, or more recently in the systematic injection of erysipelas toxins, and in favorable cases the growth of the tumor has been checked, or it has become smaller or even disappeared. Scarcely enough time has elapsed since these apparently successful experiments, to prove their permanent value, and the treatment in some cases has been very severe, but remembering the utter helplessness of the surgeon in the case of these inoperable sarcomata, any prospect of help is to be welcomed.

The foregoing illustrations are enough to show you the dependence of all branches of medicine upon the researches of the pathologist, and judging from the past it is probable that each year will materially increase this debt, until some time in the happy future medicine will no longer deserve the reproach of not being an exact science.

As medicine becomes more scientific and more exact, the practitioner will need all the more preparatory study to fit him for its use, and of this study pathology will, I think, necessarily form an ever increasing part.

I have been asked to express my views as to the following practical points:

1. The amount of time necessarily or advisably allotted to pathology in the four years' course.

This, I would answer by the following schedule and comments:

SCHEDULE.

First Year: Lectures, *i. e.*, recitations, demonstrations, etc. Pathology including bacteriology, two hours weekly, for thirty weeks, sixty hours. Laboratory, pathology and bacteriology, three hours weekly, thirty weeks, ninety hours.

Second Year: Lectures, pathology and bacteriology, one hour weekly, thirty weeks, thirty hours. Laboratory, elective special pathology and bacteriology, three hours weekly, ninety hours. *Post-mortems* two hours weekly throughout the second and third years, 120 hours.

Fourth Year: Lectures, clinical diagnosis, one hour weekly, thirty weeks, thirty hours. Laboratory, elective clinical diagnosis, two hours weekly, twenty weeks, forty hours. Elective special pathology, ninety hours.

Total: Didactic work obligatory, 120 hours.
Laboratory work obligatory, 90 hours.
Laboratory work elective, 220 hours.
Post-mortem work obligatory, 120 hours (estimated).

In this connection, I should like to call your attention to the recommendations of the committee on formulation of a curriculum for the Association of Medical Colleges.

This is that the least amount of instruction that will be accepted as sufficient in colleges of the Association when the four years' course shall have been established shall be twenty-five hours didactic and one hundred and fifty hours laboratory work in bacteriology; fifty hours didactic and one hundred hours laboratory work in pathology.

I think this is giving entirely too much importance to bacteriology in comparison with the remainder of the department of pathology, and too little time to didactic pathology which, however treated is a very comprehensive subject. Very few medical students can afford to devote enough time to bacteriology to become competent practical bacteriologists and those who expect to thoroughly master the subject will need much more than one hundred and fifty hours, while the remainder of the class who merely wish an appreciation of the principles and methods of the science, with the technical skill to avail themselves of its practical diagnostic points, will find a good part of this allotted time really wasted.

I am in favor of giving the most ample time and fullest facilities to the few who really study laboratory bacteriology and pathology, without compelling the rank and file whose ambition is merely to become intelligent and able practitioners to really waste their time in acquiring technical skill of which they will never make use.

In accordance with these views, the schedule just read gives one hundred and twenty hours didactic and ninety hours laboratory work as obligatory, but provides two hundred and twenty hours additional elective laboratory work on the two subjects including clinical diagnosis.

2. To what extent should pathology be taught in the regular course by the instructors in practice and surgery?

This question admits of a good deal of diversity of opinion, but I think it is better to err by sins of commission rather than by those of omission; that is, I think the subject should be gone fully into in connection with both chairs, even at the risk of repetition. I think, however, that instructors in both practice and surgery should confine themselves as closely as possible to gross pathology and pathologic physiology and omit entirely histologic details. Take the subject of tumors, for instance; the lecturer on surgery can, I think, well avoid anything more than a superficial discussion of the theories of tumor formation, and omit entirely all details of their microscopic structure, and yet teach a great deal of their pathology in explaining their clinical and life histories, what malignancy is, the gross peculiarities of

benign and malignant tumors, what cachexia is and how caused by tumor growth; in general, everything relating to the tumor as seen in the patient with the changes caused by its presence. The teacher of pathology can be well restricted in this part of the subject to morbid anatomy and histology; that is the study of the tumor after its removal from the patient supplemented by a careful study of that most important subject, etiology.

The immense amount of work now being done in this department indicates that our ideas on tumor causation may soon undergo revision, and here certainly the pathologist should have first place in teaching the results of microscopic research.

The bacteriology of suppuration should, I think, be taught by the surgeon in the greatest detail, although it will necessarily have to be again gone over in the systematic course. The practical importance of this subject to the surgeon makes it imperative that he devote much time, both to the bacteriologic facts and to their practical application, and it will be a further advantage to the student to view these facts from the standpoints of the chairs of practice and pathology.

The instructor in practice must teach pathology in order to make his subject clear, but as I have already said, I think he can profitably avoid entirely histologic changes and many of the details of the morbid anatomy, concentrating his teaching on what I have included under morbid physiology. One part of this subject seems to be greatly neglected, and that is the connection between the pathologic lesions of a disease and the individual symptoms. Students are apt to memorize a set of lesions and a set of symptoms and not have a very clear idea of the relation between the two.

It is difficult to draw a line between the teachings of the chairs of practice and pathology, so much so that in some of our best schools the entire didactic work of the two subjects is combined. This avoids repetition, but throws an immense amount of work on the chair.

3. To what extent should pathology be taught by the instructors in the special branches?

Here there will not be so much difference of opinion. I think each specialist should teach his students all the necessary pathology of his branch, especially that part of it whose great importance I have emphasized in regard to the teaching of practice, *i. e.*, the relation of the pathologic process to the symptoms.

The work of the various specialists will vary in this respect, as those dealing with the eye and ear and skin treat of subjects seldom taken up in a systematic course in pathology, while the specialist in genito-urinary disease will find renal diseases, at least, very thoroughly gone over both in practice and pathology, while in regard to urethral and prostatic pathology he will have an undivided field.

In closing, I wish to clearly define my position in recommending the making elective of so large a part of the laboratory work. I consider that the whole amount laid out for the four years' course would be of the greatest value to every student, and I should advise all who can possibly do so to take all the elective courses, so shaping them as to best subserve the special aim of each; but my experience in teaching pathology has taught me that all students can not be made into skilful laboratory men; and that the restriction of the obligatory practical work to the projected ninety hours in the second year will sift out the incapable and idle, and leave the field clear for better work on the part of those who really want it and can take advantage of the increased room and opportunities thus afforded.

One of the advantages claimed for a four years' course, is the greater adaptability to the needs of the individual in allowing more elective work; and I think that in all departments there should be allowed the student the greatest liberty of choice compatible with the requirements of a liberal medical education. The student can not expect to learn everything necessary to the practice of medicine in any medical college, be the course three or four years, but he has a right to demand that the education given him in his college course shall be such as to give him the broadest and most complete foundation for his studies in after life.

STIGMATA OF DEGENERACY IN THE ARISTOCRACY AND REGICIDES.

Read in the Section on Neurology and Medical Jurisprudence, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY EUGENE S. TALBOT, M.D., D.D.S.
FELLOW OF THE CHICAGO ACADEMY OF MEDICINE.

(*Concluded from page 716*).

Figure 20.—Charles Edward Nobiling. Born at Kolino (Posen), April 10, 1848. Died in the hospital at Berlin, Sept. 10, 1878. Typical (political mystic).

Assault on Emperor William June 2, 1873. Son of a suicide—attempted suicide after his act. Anarchist.

Well developed head and forehead. Small, sunken eyes. Long, slender ears. Arrest of bones of face and of jaw. Well developed nose.

Figure 20.

Figure 21.

Figure 21.—Nicholas Alphonse Aubertin. Inventor. Born July 26, 1835, at Bombas, (Moselle). Sent to the Bicêtre 1888. Attempted to assassinate Jules Ferry, December, 1887.

Persecutory, reasoning paranoiac, without hallucinations, complained of various persons who mixed up in his affairs, to whom he gave his hatred and insults. "But gradually, by a psychologic process, not at all surprising in exalted cases like this, he came to consider himself as personifying France, and making his political enemies those of the state, and conceiving the idea of punishing them. From this on, he was double insane, a persecuted persecutor on his own account, and a mystic fanatic on that of the state. In this state of mind he made a list of sixteen enemies; thirteen private and three public, and having condemned them to penalties to fit their crimes and referring them, as he called it, "to the lottery of summary justice," he drew their names from his hat in order to see with which he should begin. It was the name of Jules Ferry, condemned to death for *lise patrie*, that came first from this strange urn, and Aubertin, as a faithful minister of justice, took it upon himself to carry

out the sentence." The two following were personal enemies condemned "to have their two legs broken at the knees." Each was to have his turn.

Well developed head and forehead. Eyes small and sunken. Nose apparently normal. Upper jaw arrested.

Figure 22.—Jean Passanante; cook. Born at Salvia (Potenza) in 1849. Imprisoned at Porto Ferraja in 1879. Typical regicide (political mystic). Attempted to kill King Humbert Nov. 17, 1879. (From a likeness given by Lombrosa).

"Elder sister had an imbecile son, an albino, a subject of tremor, and of extraordinary ascetic fanaticism; his younger sister had an odd habit of, every evening after finishing her work as a domestic, shutting herself closely up in her chamber and saying her beads and praying aloud; his elder brother, Joseph, was sent to the asylum at Aversa in March, 1887, suffering from systematized religious delu-

Figure 22.

sions. 'Possessed with the idea of elaborating the principle of faith and reforming religion, he become an ascetic lunatic, preacher and prophet.' We see the analogy between the criminal and the lunatic; they are brothers in mysticism. As Dr. Virgilia well says: 'The one in the religious sphere; the other in the political, exhibit the same phenomena.'" Regis, l. c. p. 29.

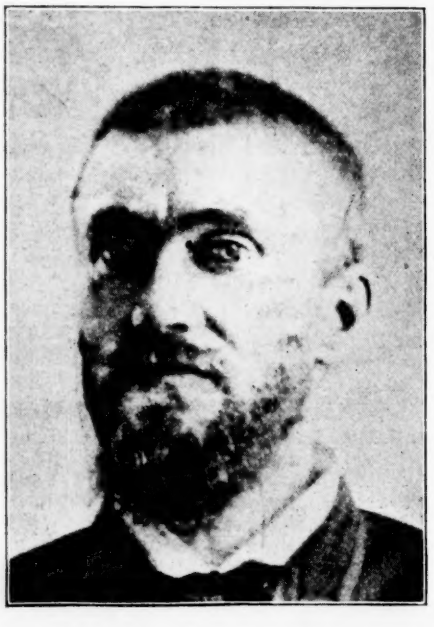

Figure 23.

There seems to have been a very prominent self feeling, desire of notoriety, etc., in Passanante, and possibly also a touch of religious fanaticism. The Bible was one of his favorite books. Socialist.

According to Virgilia he has become totally demented in prison, has lost all ideas, and lives a purely animal existence or worse; coprophagon.

High, broad forehead. Eyes irregular, set. Left smaller than right; left higher than right. Left cheek bone more prominent and higher than right. Ears long, handle-shaped. Apparent arrest of lower jaw.

Figure 23—Charles J. Guiteau shot President Garfield for the openly avowed reason that he was about to wreck the Republican party, and because the conception leading to the homicide was an inspiration of the Deity. From the evidence presented at the trial, the results of the autopsy and of the microscopic examination, alienists the world over, agree both as to his insanity and its type. Dr. W. W. Ireland is of opinion not only that he was insane but was a primary paranoiac (*primare verrück.*) His ancestry was defective on both sides. The mother suffered from an acute brain disease prior to and at the time of his birth and was for years "a nervous invalid." The father was regarded as a lunatic by clergymen, lawyers and others with whom he came in contact and by the eminent Illinois alienist, Dr. Andrew McFarland. A brother of the father died insane in Bloom-

Figure 24.

Figure 25.

ingdale Insane Hospital. The transcript of his hospital history shows that there was hereditary insanity in the family for generations prior. The homicide's brother showed strange peculiarities; the sister is an hystero-epileptic and was once adjudged insane in Illinois.

With such a family history, hereditary stigmata are to be expected and defective as is the record these are found. Drs. McLane, Hamilton (called by the State), Spitzka and Kiernan[1] (called by the defense), agree that the skull exhibited decided asymmetry. This, as Kiernan remarks, extending to the face produced what Spitzka called a "lop-sided smile," and also involved the eyes.

Spitzka[2] lays great stress on the asymmetry of the convo-

Figure 26.

lution in either hemisphere, especially those of the island of Riel. He found in the right side five fissures and six straight gyri; on the left seven fissures and eight gyri. The right hemisphere was less developed than the left. Dr. Spitzka also states that "aberrations in development of the kind discovered in Guiteau's brain has not yet been found in others than persons of unsound mind," and that "the only finding in the brain of constitutional lunatics of monomaniacal tendencies which promises to establish a relation between the insane and the state of the brain, consists in such architectural anomalies."[3]

[1] Chicago Medical Review, Dec. 15, 1881.
[2] American Journal of Neurology and Psychiatry, August, 1882.
[3] Ireland, commenting ("Through the Ivory Gate") remarks: "These statements, if they could be proved, would settle the question, but I

The principal lesions found in Guiteau's brain were adhesions of the dura mater to the inner table of the skull along the longitudinal sinus, and adhesion of the dura to the pia mater and to the brain at a spot on the vertex. Other defects were also observed in the brain. Marked asymmetry was also observed in the head and face. Head and forehead fairly well developed; eyes set close together; right apparently higher than left; ears excessively developed; arrest of development at alae of nose; jaws normal. Microscopic examination revealed, in the opinion of Dr. E. O. Shakespeare, an unbiased observer, who made it, such marked evidence of disease and defect as to warrant the opinion that Guiteau was mentally abnormal.

Figure 27.

Figure 24.—Balthasar Gerard. Soldier. Villefranche (Franche Comte) in 1558. Executed July 14, 1584. Typical (religious mystic). Assassin of William of Nassau, July 10, 1584. (Portrait p. Bibl. Nat. Coll. des Estampes).

Premeditated his crime for six years. Probably had accomplices enough. Was rather of the type of Booth with religious fanaticism added. Regis does not say much in regard to him. Was made almost a saint by the Spaniards at the time. From the anesthesia of paranoia suffered torture courageously and was believed by the Dutch to have been aided by the devil.

Figure 28.

Excessively developed head. Small, sunken eyes. Arrest of bones of face and nose. Arrest of upper jaw.

Figure 25.—Aimee Cecile Renault. Born in Paris, 1774. Executed June 17, 1794. Typical (political mystic). Design of assassinating Robespierre. Likeness after Bonneville (Bibl. Nat. Coll. des Estampes.)

Believed she ought to give her life for the return of the King.

Excessively developed occipital region. Exceedingly low forehead. Long, narrow ear. Arrest of bones of the nose. Well developed lower jaw.

doubt whether they can be proven." In reply to this remark I should say that there is scarcely a tissue of the body, more especially about the head and neck, but what will show stigmata of degeneracy as a result of arrest of development of the cells of the brain before birth.

Figure 26.—Karl Ludwig Sand. Student. Born at Wonsiedel in 1795; executed May 10, 1820. Typical (political and religious mystic. Assassin of Kotzebue, March 23, 1819. (Bibl. Nat. Coll. des Estampes.)

Meditated his act a long time. Wrote in his journal in 1818: "Lord, strengthen me in the idea I have conceived for the deliverance of humanity by the holy sacrifice of thy son. Make me a Christ for Germany, and make me, like Jesus, brave and patient in suffering." Attempted suicide after his act.

Low forehead. Small, ill-shaped eyes. Well developed nose. Prominent cheek bones. Arrest of development of the upper jaw. Excessive development of lower jaw.

Figure 27.—Jean Louis Verger. Priest. Born at Neuilly-sur-Seine, Aug. 20, 1826. Executed Jan. 20, 1857. Mixed type. (Reasoning mania of persecution, and religious mystic. Assassin of Mgr. Sibour, Jan. 3, 1857. From photograph by favor of M. Lacassague.)

Figure 29.

Figure 30.

Son of a suicide. Had hereditary insanity. Considered all those he lived with, his *confrères* in particular, as his enemies, accused them of various crimes, and on this account was deprived of his priestly functions. Became clamorous for his rights and persecuted his superiors with his demands. Went into the Church of the Madeleine, with a placard on his breast inscribed: "I was naked, and ye clothed me not; hungry, and ye gave me no meat." Up to this time he was a simple case of persecutory insanity, but now the dogma of the Immaculate Conception was about to be proclaimed by the Pope, and he had a double cause to champion; his own, and that of the Deity. He wrote and spoke violently against the new dogma, and while he anathematized his own enemies he avenged the outraged religion by killing the

Figure 31.

Archbishop of Paris in church, with the significant cry: "No goddesses! no goddesses!" and regretting, he said, only one thing, that he could not go to Rome to strike another and a more illustrious victim. Notwithstanding the ample evidences of his insanity which would be evident to any modern alienist, he was condemned and executed, without any voice but that of his advocate raised in his behalf. Medical science was then nearly forty years behind its present status. Even Lacassague, who later described his form of insanity so well, had only the year before declared him sane.

Rather low forehead. Small, deep-set eyes. Normal cheek bone. Long, handle-shaped ears. Nose arrested in its development. Arrest of upper jaw. Well developed lower jaw.

Figure 28.—Cotilla Galeote; priest. Born in Spain; condemned to death, but later interred in an asylum. Mixed type (reasoning insanity of persecution—religious mysticism.) Assassin of the Bishop of Madrid, April 18, 1886. (From photograph. Favor of De Lacassague).

He had been interdicted from office for his eccentricities. Almost an exact repetition of Verger's acts and delusions. His insanity became so manifest after his condemnation that a second medical commission was called to examine him who reported him a lunatic, and he was interred in an asylum.

Full, low forehead. Small eyes. Deep set, and close together. Ear excessively developed. Long slender nose. Arrest of development of bones of face and upper jaw. I was informed, when in Madrid, by a physician that the deformed palate and V-shaped arch had much to do in the sending him to the insane asylum.

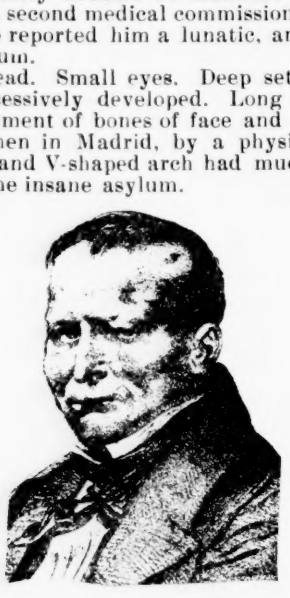

Figure 32.

Figure 29.—Louis Pierre Louvel; saddler. Born at Versailles, 1783. Executed June 7, 1820. (Political mystic paranoiac). Assassin of the Duc de Berry, Feb. 13, 1820. Drawn from life, at the Conciergerie).

Had the idea of killing all the Bourbons and chose the Duc de Berry as his first victim. Regis does not give a full account of him.

Low forehead. Eyes long; set far apart. Right lower than left. Long slender nose. Arrest of bones of face and upper jaw. Small lower jaw.

Figure 33.

Figure 30.—Louis Allibraud; clerk. Born at Nimes, May 20, 1810. Executed July 12, 1836. Typical regicide (political mystic). Attempted to kill Louis Phillippe, June 5, 1836. Impr. Thierry Freres (Bibl. Nat. Coll. des Estampes).

Had had the idea a long time to revenge the death of citizens killed at Lyons. Compared himself to Brutus—his favorite works were those of St. Justin.

Excessively developed occipital region. Low, narrow forehead. Eyes set close together. Long, handle-shaped ears. Long slender nose Arrest of bones of face and upper jaw. Arrest of development of lower jaw.

Figure 31.—De Paris l'Aine. Guard of the King. Born at Paris, November, 1753. Suicide Jan. 27, 1793. Typical regicide (political mystic). Killed Lepelletier Saint Fargeau, Jan. 20, 1793. Engraved by Brion. (Bibl. Natl. Coll. des Estampes).

Antecedents very little known; all that is known of the immediate reasons for his suicide is what he himself wrote on the back of his commission as Royal Guard, found on his breast after death. My "brevet d'hominem; let no one be disturbed. No one was my accomplice in the fortunate death of the scoundrel, Saint Fargeau. Had he not been at hand I would have done a still better act; I would have freed France of the regicide, the parricide d'Orleans. Let no one worry. All the French are cowards and I say to them:

"Peuple, dont les forfaits gettent partout l'effrai
Avec caline et plaisir j'abandonne la vie;
Ce n'est que par le mort q'on peut fuir l'enfamil
Q'impirime sur nos fronts le sang de notre rai.

("People, whose crimes dismay everywhere bring,
With cajoling and pleasure I quit in life's race;
Since tis only by death we can flee the disgrace
That is stamped on our foreheads in the blood of our king.")

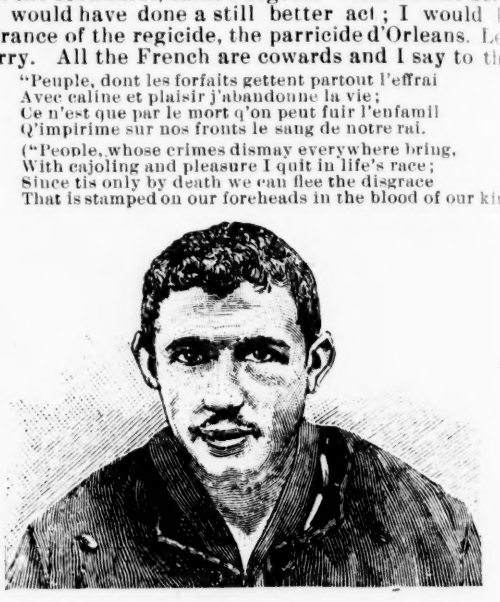

Figure 34.

Broad, low forehead; eyes small, set close together. Nose excessively developed. Slender cheek bone, well developed. Bones of the four upper and lower jaws arrested.

Figure 32.—Joseph Fieschi. Soldier, spy, draper, conspirator. Born at Murato (Corsica) July 13. 1790; executed Feb. 19, 1836. Exceptional. (Accomplices. Political mystic). Attempted assassination of Louis Phillippe by infernal machine. (From Nature).

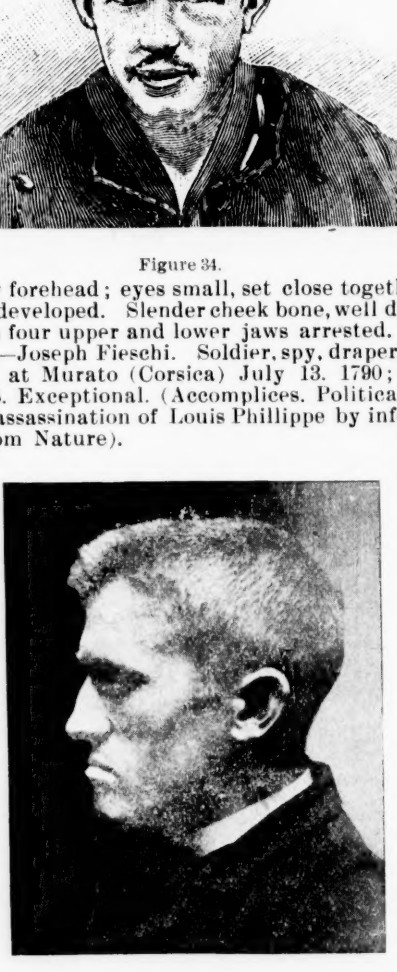

Figure 35.

The stigmata of this subject is very noticeable. Head and forehead larger. Depression over each eye. Eyes small. Left lower than right. Nose long and slender. Cheek bones excessively developed. Bones of the face and upper jaw arrested. Receding chin.

Figure 33.—Charlotte Corday (Marie Anne Charlotte Corday). Born July 27 at Legueries (Orne). Executed July 18, 1793. Type, political mystic. Killed Marat, July 13, 1793. On leaving for Paris she gave away whatever she had, retaining only "Plutarch's Lives," in which she could converse to the end with her hero, Brutus. Killed Marat to save the republic. Refused priestly consolation; was "a republican before the revolution."

Low forehead. Eyes small and round. Left eye higher than right. Long, slender nose. Cheek bones round. Arrest of upper jaw. Small, undeveloped chin.

Figure 34.—Cesare Giovanni Santo, an Italian, stabbed President Marie Francois Sadi Carnot, June 24, 1894, at Lyons, to avenge the death of anarchists previously executed by the courts.

Santo was 22 years of age and was born in a province of Milan, Italy. He was sentenced to death August 4, and was beheaded soon after. The assassin was the youngest of six children and the only one of the family who was not well respected, the remainder being hardworking men and women. He left home at the age of 11, and even at that time showed anarchistic principles. His mother was temporarily insane over her son's crime. It is said that the father had epilepsy, which disease was brought on by threats of death by the Austrians while their prisoner in 1848. It is difficult at this period to give any of the facts in regard to family history, or the mental and physical condition of the assassin, since they were not brought out in the trial and no authentic report has been published by physicians. From his photograph he presents the following stigmata:

Head small; forehead low; eyes small, abnormally shaped; ears abnormally developed, long, handle-shaped; nose small at bridge, broad and flat at alae; face, cheeks and superior maxillary undeveloped; lips large; lower jaw apparently normal. From such an ill-looking individual, stigmata of degeneracy of nearly all of the tissues of the body must result.

Figure 35.—Patrick Eugene Joseph Prendergast, 25 years of age, shot and killed Mayor Carter Harrison, of Chicago, Oct. 28, 1893, at his residence, claiming that the Mayor had not given him a certain office which had been promised him. Very little was obtained at his trial in regard to the family history, except that his grandfather was insane. There can be no doubt but that Prendergast was insane, since five experts who were employed by the State to examine him found him, after spending considerable time in making a thorough examination, to be a paranoiac and therefore could not and did not appear for the State, but did appear, without reward for the prisoner.

Prendergast was born in Ireland and came to this country at the age of 5 years. On the witness stand I gave the following testimony: Height five feet, seven inches. Weight 132 pounds; hair red, coarse and stiff; very little upon face. Nose fairly normal, thin at bridge, broad at alae. Ears large and projecting; lobes short and broad; tragus both well developed; helix broad, with typical tubercles at the upper and outer border of the ear. Lips, upper, small and thin; lower excessively developed, more prominent because of undeveloped upper jaw. Face, arrest of development of the bones of the face, especially at the alae of the nose. Zygomatic arches, normal, but appear prominent owing to the arrest of the bones of the face. Lower jaw normal. Forehead receding. Head sunken at the bregma; occipital portion excessively developed; circumference 22.2 inches (57 millimeters); antero-posterior, 7.75 inches (20 millimeters); lateral 6.36 inches (16½ millimeters); lateral index, 82; therefore extreme brachycephalic. Feet large; hands normal; fingers long and skinny. Width outside first permanent molar 2.25 inches; width outside second bicuspid, 2 inches; width of vault, 1.25; height of vault .75; antero-posterior, 2.

ARTIFICIAL SELECTION.

Read before the Milwaukee Medical Society, Oct. 9, 1894.

BY W. H. WASHBURN, M.D.

PROFESSOR OF THE PRINCIPLES AND PRACTICE OF MEDICINE AND OF CLINICAL MEDICINE IN WISCONSIN COLLEGE OF PHYSICIANS AND SURGEONS, ETC., MILWAUKEE, WIS.

It is by natural selection that those most fitted to succeed in the struggle for existence survive and propagate their kind. The familiar example may be cited of the deer which, being the equal of all the other members of the herd in other respects, is less swift of foot, and hence lagging behind his fellows falls a victim to his feline enemy the panther. His untimely death has eliminated him from the problem and made it impossible for him to become the progenitor of a slow-footed race of deer.

The dominant races of men have been evolved by reason of the operation of the law of natural selection. While we may not at this time care to repeat or emulate the violent acts of our forefathers, by which they over-ran the territories of their less ferocious neighbors, appropriating the land, and in many instances slaughtering entire populations, we must nevertheless recognize the fact that it was by such deeds as these that a superior race of the *genus homo* became possible. With advancing civilization, and with our developing ideas of justice, equity and the brotherhood of man, natural selection has come to play a comparatively subordinate part in the solution of the various problems confronting mankind. In point of fact, as we advance in civilization, we are on every side adopting methods and means of rendering entirely inoperative this great natural law.

The law of nature, as well as the decree of Jehovah seems to be, "in the sweat of thy face shalt thou eat bread," and the law of natural selection if allowed to operate would with promptness eliminate from the problem those who refused to work. The so-called dependent classes, found principally in alms-houses and other charitable institutions, in the large cities begging from door to door, and in the country on the tramp, are representatives of the class who eat bread without having fulfilled the other part of the decree. Starvation is the legitimate end of these people and thus would natural selection solve the problem of the care of the dependent classes. But with the evolution of a superior race of men, we have acquired humanitarian tendencies and an increase in moral and sympathetic feeling, and these qualities in us will not allow us to stand idly by and witness the death of these elements of society by the operation of natural laws. We accordingly establish and maintain institutions for their care at the expense of those other members of society who are better fitted for survival, and in the meantime they are permitted to continue the work of reproduction thus continually replenishing the earth with offspring similarly unfit for survival. Society would probably suffer a greater evil by reason of the outrage to its finer feelings if natural laws were permitted full sway in the solution of this problem, than it now suffers in encouraging the growth of this dependent class. We see, then, in our poor laws and in our charitable institutions agencies which interpose to prevent the full operation of the law of natural selection.

If the trade union enables an incompetent and inferior craftsman to obtain work at current wages, by just so much does it interfere with the operation of the law of natural selection, which would condemn this man to idleness and starvation, or the adoption of a new means of earning a subsistence in some avocation in which he might excel. The natural law being thus rendered to a certain degree inoperative, the average efficiency of the whole class, trade, profession or occupation into which this individual has been foisted and maintained is correspondingly reduced and the tendency is toward deterioration rather than the reverse.

There is probably no agency in operation to-day which is opposing the operation of the law of natural selection more effectively, or I might say as effectively, as the medical profession. In the evolution of medical science we see this influence at work in every direction. I may here advert to the agency of certain disease germs in the work of natural selec-

tion. These germs are in many instances unable to maintain an existence and cause disease except in the tissues of the comparatively unhealthy, and in those certainly they are able to flourish in the greatest exuberance and most often ultimate in death. Were it not the fact that the healthy man is able to successfully resist the invasion of his body by microörganisms, disease would be the rule rather than the contrary. We live at the bottom of an atmosphere which fairly teems with microörganisms of innumerable varieties, many of them being pathogenic. These microörganisms are therefore constantly invading the bodies of men, the healthy among whom react against them so successfully that disease does not always result, while on the other hand the unhealthy are constantly falling victims to their pathogenic influence. In this way it transpires that disease germs, in general, are friends of the human race rather than enemies, rendering efficient aid in eliminating the physically unfit from the problem in the struggle of life. I say, in general, disease germs are friends of the human race, because there are germs that appear to attack with equal facility the vigorous and healthy, as for example those of measles, syphilis and smallpox.

The advances in medical science both preventive and curative which have, within the last thirty or forty years, lessened the prevalence and the mortality of the germ diseases, have enabled those to survive and procreate who under other circumstances would have perished without issue. As a consequence of these advances in medical science, it has resulted that while the mortality per million of population has markedly decreased in the group of diseases caused by microörganisms, it has correspondingly increased in the group of constitutional diseases. In this latter group hereditary predisposition plays an important part, and a survey of vital statistics indicates that there has been an increase in their prevalence and mortality. An increase in diseases of the respiratory organs, of the circulatory organs, also an increased tendency to diseases of the nervous system, suicide and intemperance. Increased mortality from cancer, diabetes, rheumatism, anemia and renal diseases.

In 1850 there were (Holmes, *Medical News*, July 7, 1894) 422 blind persons per million of population, while in 1890 there were 807. In the State of Maine (Haycraft, *British Medical Journal*, Vol. i, p. 404, 1894) there were in 1850, 75 insane persons per million of population, while in 1890 there were 685 per million. In 1838–1840 there were 155 deaths among infants under 1 year old per 1,000 born, whereas in 1890 the proportion had sunk to 142 per 1,000. In the period 1851–1860 the deaths from phthisis in children under 5 years old were in the proportion of 13.05 per 1,000 living, and from hydrocephalus 25.39 per 1,000 living, whereas in the period 1871–1880 the deaths from phthisis had fallen to 7.67 per 1,000 and from hydrocephalus to 19.00 per 1,000 living.

In the meantime, deaths from tuberculous affections other than of the lungs had risen from 19.20 per 1,000 living of the same age to 25.50 per 1,000. (*Journal of the Royal Statistical Society*, March, 1894.)

These few comparisons of mortality rates are sufficient for the purpose, but might readily be added to if time were taken to study the mortality returns of any city or country where trustworthy records are kept. But the physical and moral well being of society and the advance of civilization is retarded in another conspicuous direction. There was a time in the history of mankind when ability to kill and to successfully rob one's neighbor was necessary to the continued existence of the human race, and it hence resulted that for thousands of years the most daring robbers and homicides were the ones best calculated to survive and leave offspring, but we happily live in a time when mankind has evolved out of this state, and these qualities render the subject out of joint with the times and less able to survive in the struggle of life.

The law of natural selection does come into exercise to a certain degree in the class we are now considering; that is the criminal class. There is a certain economy in vice; that is, vice, like the bacillus in the process of its growth calls into operation agencies which tend to its own extinction. The criminal class is constantly recruited from the non-criminal; the average duration of life among the members of this class is much less than the general average; and they less often leave progeny. Nevertheless, there are numberless instances on record where crime has appeared among large numbers of the descendants of criminal ancestors. Now these descendants as certainly inherited their impulse to vice and crime as the child of phthisical parents inherits its tendency to tuberculous affections and is no more to be blamed in the one case than in the other, and yet society can not be called upon to supinely suffer from the depredations of this class.

Our penal laws are enacted with a view not to the punishment of the criminal, but to the protection of society against his further acts of criminality, and he is accordingly temporarily withdrawn from his accustomed haunts of vice and boarded at the expense of normal man in State institutions. Having served out the term of his sentence here, he returns to society to again engage in criminal enterprises and incidentally in the work of procreation, producing progeny that will in turn prey upon society and require to be imprisoned at society's expense. While it is a fact as already stated that natural selection is coming into play to a certain extent in the elimination of this class of society, it is nevertheless undeniable that it is increasing in numbers to an alarming extent as is shown by prison statistics. (President Brinkerhoff's address at St. Paul Prison Congress, 1894.) Thus in 1850 there was in the United States of America 1 prisoner to every 3,442 of the population, whereas in 1890 the proportion had risen to the enormous ratio of 1 to every 757 of population. These considerations would seem to warrant us in the conclusion that interference with the operation of the law of natural selection, as above indicated, has enabled a physically and morally inferior class of individuals to survive into middle life and become the progenitors of still further degenerate offspring. Thoughtful men are already able to foresee that if this retrogression is not to continue, something will *have* to be done in the way of artificial selection.

Malthus recognized vice and misery as the most powerful agents in natural selection, and in his famous "Essay on Population," first published in 1798, pointed out a means of greatly reducing the prevalence of vice and misery as a means of natural selection. His plan was to insist strenuously upon the obligation of every man to maintain himself

and his offspring, prohibiting marriage on the part of any man not able to support an average family; that is, himself, wife and five children. I am not aware that the suggestion of Malthus has ever been put into operation anywhere, the argument of his opponents, among whom the clergy have always occupied a prominent place, being, practically, that inasmuch as man is endowed with procreative instincts and capacities he should therefore exercise them, let the consequences be what they may in the direction of bringing into being a race of paupers, criminals, imbeciles or other types of abnormal man.

As the medical profession deals with the physical disorders of the human body and strives to limit their prevalence by the discovery and application of prophylactic measures, the State, that is organized society, dealing with social disorders should equally strive to discover and put into operation efficient measures having in view the prevention of these disorders. Society then, that is the State, should seriously consider the question of supplementing what is still operative in the way of natural selection by artificial selection, and this can be carried out by submitting the members of the classes known as defective, delinquent and dependent, with due discrimination, to the operation of castration. By this operation the individual is at once and forever eliminated from the problem as a possible ancestor of future abnormal men. We are not here interested or concerned as to the future careers of these emasculated elements of society. We are not particularly interested in this respect to know whether the criminal thus treated becomes more docile, law abiding and therefore respectable, or on the other hand becomes more violent, vicious and murderous. This does not appear to me to be pertinent to the issue; if he does thus become more vicious he can be effectually dealt with by sequestration or execution; the question is entirely one of prophylaxis, and there can be no possible question raised as to the effectiveness of the measure in the individual case.

Every individual born into this world has a *right* to *demand* a normal and healthy, mental, moral and physical constitution, and therefore this application of artificial selection in the treatment of not only the delinquent, but also the defective and dependent elements of society will not only protect society, advance civilization and lighten the burden of normal man, but will also prevent suffering, misery and the cruel treatment of unborn millions of abnormal men. It is a measure that is not only merciful to society now but is merciful to future prospective victims, as well as to unborn criminals themselves, and as for the individuals to be operated on, their crimes or defects should be regarded as sufficient justification for the treatment.

It is the rankest kind of folly, not to use a more vigorous term, to suppose that because a man is born with procreative apparatus and instinct that therefore he is to exercise it without regard to the consequences to himself, his offspring or to society at large. This, however, appears to be the philosophy of those who have in the past opposed the theory of Malthus, or rather perhaps, what in their imagination they are pleased to regard as the Malthusian theory. The sooner the folly of this proposition is generally recognized by mankind, and by legislators in particular, the better it will be for the interests of civilization, and I believe that within the lifetime of many here present, emasculation will be the penalty of certain crimes, if not the recognized treatment of all chronic criminals, and that, with wise discrimination, it will be advantageously applied in the management of the other classes of abnormal man already adverted to; that is, defectives and paupers.

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THE ANTRUM OF HIGHMORE IN ITS RELATION TO VOCAL RESONANCE.

Read by title in the Section on Oral and Dental Surgery, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

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Any deviation from certain well-known points of design in the construction of a musical instrument is liable to result in failure. Maker and musician have long vied with each other in their efforts to suggest modifications and improvements without materially altering the original form, which consists of a vibrating body re-inforced by sounding-boards or resonant cavities in endless variety. They are all, however, poor copies of the original instrument, the human harmonium. While musical literature abounds with accurate scientific descriptions of musical instruments in general, next to nothing can be found regarding the science and art of voice melody and oratory, and still less treating of the design of the organs themselves.

The pianist, as he skilfully runs over the keyboard of an instrument, quickly perceives its good or bad points and indicates them with a degree of precision that clearly shows a knowledge of its construction. The expert organist will learnedly discuss the different makes of organs, as he dreamily draws out one stop after another until, growing enthusiastic over some special combination of reeds and diapason, he bursts forth into a perfect flood of melody that fairly entrances his listeners and stamps him, not only as a master of technique, but shows his acquaintance with design and construction as well. No one not familiar with the anatomy of an instrument can combine its good points so as to get the best results. The virtuoso as she gracefully fondles a Cremona will expatiate upon the beauty of this or that particular form or make, and many times reveal an acquaintance with the literature upon the subject that is truly refreshing. The knowledge of the value of correct design and construction of musical instruments is not alone confined to professionals, but pervades to a greater or less degree the general public.

The would-be musician, before he commences his musical education, secures the advice of an expert in the selection of an instrument and thus begins his career in an intelligent manner. How marked the contrast in the selection of a "human harmonium" and the education of its possessor. Some one hears a child sing and remarks that it "has a good voice." An instructor is secured and the "cut and try" method of its education begins. No scientific examination of its vocal organs is made to determine their character or condition. Many times a brilliant career is suddenly checked through vicious methods of training by persons ignorant of the physiologic conditions existing in the production of harmony. Oftener

yet no effort is made to ascertain the cause of failure.

If an organ or piano should get out of tune an expert would be sent for at once to set it right, and yet the human vocal organs are as truly musical instruments as they, and as readily amenable to scientific investigation and treatment when out of repair. By aid of a laryngoscope fitted with a small incandescent electric lamp, the posterior nares and vocal cords may be thoroughly examined and all pathologic conditions detected. Not only this, but by using the same light the antrum may be illuminated from within the mouth and its outlines clearly defined, so that any deficiency or abnormal condition may readily be determined.

The vocalist of the future need not remain in ignorance of the condition of his vocal organs. Physical examinations will be made in the beginning, and from time to time, to determine how the cords and membranes are standing the strain of training. The hygiene of the parts will be closely observed and a more rational system of instruction, based upon purely scientific methods, will be adopted. Art has truly been the precursor of science in the education of vocalists, and too much attention has been given to results and too little to the scientific investigation of the causes of success or failure. Experimental methods have prevailed to too great an extent in the past and many pupils have found after years of training that they have mistaken "appreciation for genius" and that, by reason of some physical inadaptability, which might have been known in the beginning of their career, had an expert been consulted, they can never become successful vocalists or orators. No amount of instruction, no matter how competent, can account for physical incapacity in the vocal organs of the pupil, whether due to a congenital deformity or acquired pathologic condition of the cords, or the resonant cavities that make and control harmony.

Study of the anatomy of vocal organs has demonstrated the existence of a definite type, the possession of which is essential to success for soprano and bass singers and orators. If more attention was devoted to the study of the anatomy and physiology of the vocal organs, a better understanding of their functions would prevail and fewer failures would be recorded among vocalists, either in their early training or subsequent career. The widespread ignorance of the subject is deplorable, and in marked contrast with the knowledge that prevails regarding the value of quality and form in musical instruments in general.

Considerable attention has been devoted to phonetics by Alexander Bell and others, but their investigations have been confined largely to speaking rather than to singing and oratory. While it is true that the human voice is capable of wonderful improvement by patient training and that now and then a genius overcomes apparently insurmountable defects and attains unquestioned success, on the other hand it is equally true that another person may have perfect vocal organs and yet make a dismal failure.

The possession of correctly formed vocal organs does not necessarily insure that the possessor will become a successful vocalist under training, any more than that the ownership of the best manufactured musical instrument guarantees the development of artistic technical ability; nevertheless, the possession of a perfect instrument is the first step in attaining perfection either in instrumentation or vocalization although not the *sine qua non* of success.

There are many things other than perfect vocal organs that are essential for a successful vocalist; in passing we may mention artistic temperament, musical ear, pliable muscular system, patient perseverance and good health. These conditions have, however, all been noted more or less frequently in the past, and do not properly come within the scope of this article which is intended to deal with resonant cavities only, and to point out the rôle they play in the production of harmony.

Vocal sounds are generally complex in character and are produced by the passage of the breath over the vocal cords. On the other hand, non-possession of any or all of these militates against successful results under training.

Then, again, the development of pathologic conditions even after a considerable degree of perfection has been acquired is a quite common occurrence. Hypertrophy of the mucous membrane covering the cords, lining the fauces, or oral and nasal cavities, or the accessory resonant cavities themselves may result as the sequelæ of overstrain. Some individuals have what is known as "a catarrhal dyscrasia" and are especially obnoxious to catarrhal inflammations.

Local edema of the pharynx and cords is not uncommon in connection with a weak heart. The lungs may suffer and consumption, asthma, emphysema or pleurisy develop, any one of which would lessen their bellows power. Nasal polypi or hypertrophy of the nasal mucous membrane may occur and lessen, if not entirely shut off, vocal resonance in chronic conditions, and lastly singing in public halls, many times ill ventilated and filled with dust from the incoming audience, tends to irritate the vocal organs and develop a catarrhal condition. The use of alcoholic stimulants so common among certain classes of concert singers, is also ruinous to the voice.

The purest sounds are the vowels repeated in the key of "C" natural, with as little obstruction to the exit of the sound waves as possible. When the key is varied then the modifying influence of the resonant cavities is obstructed. In speaking in an ordinary tone of voice, the sound produced is largely "cordal," but if a special declamatory effort is made, the accessory cavities are called into play and assume an important part, the same as in singing.

The basis of audible vocal sound is found in sound waves set in motion by vibrating vocal cords. The pitch varies in an inverse ratio to the amplitude of the vibrations of the cords, the texture of which has much to do with the quality of the tones produced. Variations in tone are largely under the control of the will of the individual, through which changes in the tension of the vocal cords or alteration in the shape of the soft parts, is accomplished by muscular action. The direction of the sound waves is also altered in a similar manner so as to bring into play the various resonant cavities.

The range of tones produced by the human voice varies greatly in different individuals and even in the same person at different times. It is also susceptible of great cultivation and as high as sixteen harmonies have been noted in the trained voices of some bass singers. Training alone, however, will not account for this high degree of perfection; all the physical conditions must be perfect and the resonant cavities ample and so situated as to be under perfect control.

In rendering ordinary organ music, only a few

pipes and stops are needed, but when it is desired to execute the fugues of Bach or Mendelssohn's sonatas, a largely increased number is required. So also in that degree that the resonant cavities of the human voice are harmoniously developed will it be possible to produce musical tones in variety and perfection. Then, again, even as any variation in the form of the reeds or sounding-board of an instrument will modify the tone produced, so will any change in the form or physical condition of the resonant cavities of the human voice influence its range and quality. Size also seems to have a more or less marked influence, and so far as the writer's observation has gone there appears to be, everything else being equal, a correspondence between the range and perfection of the human voice in speaking and singing, and the capacity of the resonant cavities. Who ever saw a great vocalist or orator with a narrow, pinched face? Are not the distinguishing features of the successful vocalist the possession of a more or less oval and comparatively broad face with a projecting forehead, a strong nose and firm and pointed jaws—all points indicative of large resonant cavities? The breadth of the face gives space for the maxillary sinuses that are located in the superior maxillæ, and a wide nasal cavity also. The prominent forehead permits of a full development of the frontal sinuses. Physical examination of a large number of individuals permits me to say with a considerable degree of positiveness, that there is a correspondence between the breadth of the face and the size of the resonant cavities and that, from a study of the physiognomy alone, a very accurate idea of the possibilities of any given individual as a vocalist may be formed, provided no internal pathologic condition exists, which latter also may be accurately determined by laryngoscopic examination. There is no question in my mind but that there is a type for vocalists and orators, which is indicated by more or less pronounced features. How seldom do we find an accredited successful vocalist with what may be termed a pretty face. It is true that many such persons possess sweet voices, but they invariably lack power.

It is only necessary to call to mind the faces of a few noted vocalists and orators in order to establish the fact that there is a type of physiognomy to which they, in the main, conform. Let me cite a few, taken from "Practical Physiognomy," by Mary Olmstead Stanton:

Annie Louise Cary.—Large mouth, full red lips; full cheeks and short, thick, muscular nose. These points given by Mrs. Stanton for Miss Cary, indicate breadth of forehead with considerable development of the maxillary sinuses. Etelka Gerster.—Dramatic jaw; firm and rounding chin; nose broad and strong; forehead prominent, also cheek bones. Litta (Marie von Elsner).—Full broad face; broad nose and prominent forehead; and so on through the list, which comprises Christine Nilsson, Materna, Scalchi, Thursby, Albani, Patti, Madam Sainton-Dolby, Campanini, Gatty, Huntly and many others. Then for orators we might mention Henry Clay, Henry Ward Beecher, Theodore Tilton, Robert Ingersoll, Daniel Dougherty, Wendell Phillips, John Gough and so on without a single exception, all more or less square-shouldered, broad faced, prominent-featured men with large sinuses.

Then again, certain races also are noted for their melodious voices, whether trained or untrained—most prominent among these may be mentioned the negro race. The plantation songs are known the world over, not so much for their artistic merit as for their melody. Now, if the physiognomy of the negro is called to mind it will be remembered that it is marked by the very points cited as essential for good vocalists, and they undoubtedly possess large resonant cavities.

The Celtic race, which can be distinguished wherever met by its rich, broad tones, has produced many noted vocalists. Some of our most prominent orators are of Scotch-Irish descent. The "banks and braes" of bonnie Scotland teem with a people noted for their melodious voices. No one can correctly sing "Annie Laurie" or "Auld Lang Syne" who has not Scotch blood in his veins or the Scotch physiognomy. The Norse race also, has many of the points above indicated. Choral associations are quite common among them and the Swedish Nightingale is a marked example of the type.

There are also races and peoples that are marked by a deficiency in their powers of vocalization. The Japanese and Chinese races speak and sing in a monotone with little or no range of the voice. That this is not entirely from choice may be proven by studying their physiognomy. Their faces are narrow and short, their features smooth, their eyes small and their foreheads receding—all points indicating small resonant cavities.

The Indian races of America have comparatively long, narrow faces, more or less depressed in the region of the maxillary sinuses, which gives prominence to the malar or cheek bones and limits the size of the antra. The Indian seldom or never sings, and his war-whoop has little music in it, although sometimes possessing considerable volume.

Brother Jonathan is too young to have acquired a national type, but the people who boast the bluest blood are noted for their pinched physiognomies and high pitched voices.

A study of the face of the Goddess of Liberty, that graces our American dollar, and which may be taken as representing the American type, as far as there is one, reveals the cause of this, as it shows a narrow face, with high arch and a tendency to suppression of the lateral incisors which indicates small or deficient antra.

Then again, temperamental distinctions may be made bearing upon this point. The nervous and bilious temperaments seldom if ever produce noted vocalists or orators. The basal temperament of this class is generally sanguine, although sometimes a sanguo-bilious or nervo-sanguine temperament may be found. These temperaments are to be remarked by broad oval faces, firmly set jaws and a more or less square articulation of the teeth; all points indicating harmonious and full development of the maxillary sinuses. Having considered the resonant cavities of the head in their general relation to the human voice, let us turn our attention for a few moments to them more in detail. Prominent among the accessory nasal cavities is the antrum of Highmore or maxillary sinus. Very little is known of its place in the evolutionary history of man and stil less regarding its function.

A considerable experience, personal and clinical, in treating diseased conditions of this cavity has led me to look upon it as an important adjunct to vocalization, adding materially to the quality of the voice and perhaps also to its range.

The antrum of Highmore is situated in the superior maxillary bones on either side of the face, and in some instances penetrates the malar bone, forming an irregular elongated cavity. Its situation in general, may be said to be beneath the orbit and on the outer sides of the nasal fossæ. Its floor rests upon the alveolar process of the superior maxilla, in which latter body are embedded the roots of the superior teeth. Its anterior wall is formed by the facial and its posterior, by the zygomatic process of the superior maxilla. Its roof is formed by the floor of the orbit. Its contour, although varying somewhat in different individuals, is generally pyramidal with its base toward the nasal cavity and its apex pointing toward the malar bone.

The floor is often very uneven on account of the close proximity of the apices of the roots of the teeth, which often show in the cavity as slight elevations covered only by thin layer of bone. In quite a number of skulls examined, the roots of the molar teeth which often show in the cavity as slight elevations covered only by a thin layer of bone. In quite a number of skulls examined, the roots of the molar teeth projected a considerable distance into the cavity, forming hillocks, while in other instances thin bony partitions were observed that divided the cavity more or less completely into compartments. I am not fully satisfied in my own mind as to whether the latter are secondary growth or simply remains of the original bone that was not removed in the hollowing out process which took place in the formation of the cavity.

At birth there is no indication of the antrum, and so far as I know there is no literature treating upon the process of its formation. A few words, therefore, based upon original studies in this direction may not be amiss in treating of this cavity.

In the process of the development of the face at an early stage, only a very thin layer of bone separates the orbital cavity from the nasal fossa. Later, the turbinated bones seem to arise from the inner side of the orbital plate. Soon after this a slight depression appears between the middle and inferior turbinated bones which marks the location of the maxillary sinus. Shortly after birth this depression begins to deepen and advances with the growth of the superior maxillary bones, its final size and contour depending, to a great extent, on the conformation of the superior maxilla, the process of the growth of which is by internal absorption and external deposition of osseous material. The lining membrane of the antrum is analogous and continuous with that of the nasal fossa. The cavity which, at first, is simply a lateral nasal fossa comes finally to be shut off from the main cavity by the turbinated bones and a thin membranous partition through which one and sometimes two openings, the osteum maxillare, are found. The secretions from the mucous membrane lining, this sinus are normally discharged through these openings into the nasal cavity. The only other openings through the osseous walls of the antrum, other than those above described are the posterior dental canals, but as these do not penetrate but pass underneath the mucous membrane lining the cavity, they can not properly be said to be openings into the antrum.

The other cavities opening into the nasal fossa are the frontal, sphenoidal and ethmoidal sinuses. The frontal sinuses are situated between the two tables of the frontal bones and open into the nasal fossa through the infundibulum. They are absent at birth and develop as the individual matures, like the antrum. The sphenoidal sinuses vary considerably in different persons, sometimes reaching considerable magnitude, at other times being absent altogether. When present they show as rounded cavities in the body of the sphenoid bone and have an opening into the superior meatus. The ethmoidal sinuses or cells consist of a series of compartments hollowed out in the ethmoid bone. They are divided into anterior and posterior cells, the anterior of which communicate with each other and open into nasal fossa in the region of the hiatus semilunaris by means of the ostia ethmoidalia. Vicarious openings are sometimes found into the frontal sinus and the orbit.

In describing the action of the resonant cavities let us for a moment consider the influence exerted by the nasal cavity in vocalization. "The most prominent function of the nasal fossæ in phonation, is as a resonant cavity to the voice in the production of articulate sounds; a nasal element is present in the utterance of all sounds, whether oral or nasal, and is even more conspicuous by its absence." Bosworth says that: "In cases where the posterior nares are occluded so as to preclude the action of the nasal cavities as resonators the voice is materially modified, and articulation becomes more or less fatiguing." Regarding the influence of the frontal sinuses, Mary Olmstead Stanton, a prominent writer on physiognomy, points out "fullness of forehead," among other facial signs of musical and oratorical capacity, "where is located the frontal sinuses. The fullness at this point shows that the cavities of the sinuses are large and hollow and this peculiarity of formation assists resonance of tone acting on the principle of the drum." She also speaks of "full rounded cheeks" as indicating "bellows power," and although she mentions "prominent malar bones" she fails to connect them with the antrum, but cites them as indicative of "great muscular development" . . . which, she says, is essential to good vocalization."

These two quotations seem to cover the gist of the literature upon the subject of vocal resonance, and although I have made diligent search I have nowhere found any reference to the maxillary sinuses as accessory resonant cavities. It may not be uninteresting in this connection to indicate how I came to attribute to the antrum an important rôle in vocalization.

In treating cases of suppuration of the maxillary sinuses, it has been my practice to trephine the outer plate in the region of the canine fossa. The bone thus removed is never replaced, but the opening is closed by extension of the mucous membrane which forms a membranous covering that remains more or less sensitive for a considerable length of time. This latter special feature enables the patient to detect the least vibration of the air inclosed in the cavity.

The human vocal organs belong to the class of instruments known as "reeds," and the maxillary and frontal sinuses serve to reinforce the tones produced by the vocal cords, even as the sounding-board of the violin and the guitar modify the notes produced by the strings, adding immeasurably to the richness and fullness of the tones produced. No mechanical instrument has ever been invented that can equal the human voice in quality of tone and richness of expression, and it is just these points that the antrum and the other resonant cavities add to it.

It is not necessary for me to enter into the consideration of the laws of acoustics governing the relation of the maxillary sinuses to vocalization; suffice it to say that the direct connection of a sounding-board to an instrument is essential to the re-inforcing of the tones produced. It is not essential that the sounding-board be an open tube. The air within a hollow closed space may be set in vibration by sympathy and serve the same purpose as if it were open at one end. Knudt's experiments have conclusively demonstrated the truth of the above statement.

In the case of the human voice, all the bones of the head vibrate in unison with the vocal cords, and the vibration is carried to all the closed cavities of the head, giving one kind of resonance. The antrum in addition, and by reason of its semi-membranous covering on the nasal side, which has a lower tension than the osseous walls, produces a yet more mellowed tone which is under the control of the will of the individual, who, by changing the direction of the sound waves, can send them over the surface of this membrane, thus securing its modifying effect.

Variations in the quality and register of the human voice are largely the result of physical changes. These are to be remarked in the changes of the voice from infancy to youth and again at full maturity and in old age. The voice varies according to the health of the individual, being stronger in good health and impaired during illness.

Pathologic growths, such as polypi, at times occlude the post-nasal space; hypertrophic rhinitis also acts in the same way to shut off the sound waves from the accessory nasal sinuses giving the voice the so-called nasal twang, which contrary to common understanding, is not a nasal sound but is due to the absence of the nasal influence.

In conclusion, permit me to present the following summary, viz:

That the maxillary sinuses are developed with the growth of the individual after birth.

That in some instances one or both are absent or but slightly developed.

That they have no definite form and vary greatly as to size in different individuals.

That there is a correspondence between the breadth of the face and the size of the antra.

That in some instances they are divided into compartments by osseous walls, which effect resonance.

That they are cavities intimately connected with the nasal fossæ, being separated therefrom, in part at least, by a thin membranous partition.

That the air contained in these cavities vibrates in harmony with the tones produced by the vocal cords.

That this vibration is most appreciable when the tones produced are full of melody, as in certain kinds of church music and negro melodies.

That it is more prominent in singing than in speaking, unless a special declamatory effort is attempted.

That there is a type of individual to which the successful vocalist and orator belongs and which is indicated, among other things, by a considerable but harmonious development of the maxillary sinuses.

That variation in the size and shape of the resonant cavities when present, undoubtedly affects their value as resonators; and

Finally, that certain races, noted for their melodious voices, are distinguished for the conformity of their physiognomy to the type above given for vocalists.

DISCUSSION.

DR. TALBOT—I regret Dr. Sudduth's absence, because I like when I attack the position taken by a writer, to have him present to talk back. I take decided issue with the arguments made. Dr. Sudduth has mentioned a number of singers, most of them exceptionally fine artists, who he says all had large features. It is a well-known fact that certain forms of disease are the result of neurologic conditions. Great singers—and this is especially true of those mentioned in the paper—are all geniuses in their way, and genius is now laid down in medicine as a particular form of insanity. A man who is an expert in invention, in art, is suffering from a form of insanity. All his ability runs in one direction. We shall find, if we study the lives of great geniuses, that almost always they are of no account in any other direction than that in which their preëminent genius is acknowledged, this particular faculty having been developed abnormally at the expense of the other parts of the brain, which are accordingly weak. Inherited tendencies have much to do with the result. If the brain develops in only one direction the osseous system has to suffer, and accordingly we find arrested development of different parts of the osseous system. If a large nasal cavity, large antra, and large jaws are due to the fact that the individual began to sing early and in that way developed them, just so we can develop the maxillary system. What effect the antrum has upon the vocal sounds produced I can not see, and I think that if we examine the skulls of noted singers after death the antra will be found much like the antra of others—some one way, some another. Gray says the opening from the antrum into the nares is of the size of a crow's quill. I have seen these openings so large that one could pass in a finger. It is asserted by the laity that individuals with high vaults make the best singers. I doubt it. There is a seeming difficulty in the way because of the contracted jaws found with this type. Dr. Sudduth speaks of roots of teeth extending into the antra. This is very rare, though it is occasionally seen.

DR. G. S. DEAN—I am not prepared to discuss the paper, but I must say a word. The paper is of great value and touches upon a subject which we, as dentists, ought to know something about. If it is true that the antrum and the cranial sinuses are concerned in voice production generally, we ought to know about it particularly, as we may, in time, learn how to develop the antrum. Dr. Ottolengui tells how he moved the teeth of a public singer and the voice improved. Dr. Sudduth has treated of the voice as a string instrument; I think it is more of the character of an organ pipe. The first principle of sound re-inforced by a column of air is familiar to all. Take a string which by itself can be heard only three feet away; with a sounding board to re-inforce it. its tones will fill the room. The organ pipe is another illustration. Among birds, the owl has large cranial sinuses, but he is not much of a song-bird. So in the animals, the elephant has the largest cranial sinuses of all, yet he has not a very good voice. Dr. Sudduth makes the point that when the nasal passages are closed, as by catarrh, the voice becomes what is called nasal, although it is in reality absence of the nasal quality. As a general principle, the greater the volume of air set in motion by the sound the greater is its volume. The point brought out by Dr. Sudduth, that we as dentists ought to familiarize ourselves with the mechanism of sound is important. For myself, I propose to study the subject presented.

DR. VAN ORDEN—If the antrum is not for the benefit of the voice, what is it for? It seems to be of little value unless it should be for this, or for helping the nose in blowing. It would seem well worth while our looking into the anatomy of the subject farther than the text-books take us.

On Transmissibility of Cancer from Man to Animals.—M. Boinet, after a long series of experiments on the transmissibility of carcinoma from man to animals, states that after having made repeated inoculations on the rat, the rabbit and the guinea-pig, he concludes that histologic examination of the lesions which resulted does not authorize him to pronounce in favor of such transmission.—*Semaine Medicale*, November 3.

PROGRESSIVE HYPERMETROPIC ASTIGMATISM.

Read before the Chicago Ophthalmological and Otological Society, Oct. 16, 1894.

BY WM. T. MONTGOMERY, M.D.
CHICAGO.

In his classical work upon accommodation and refraction of the eye, Professor Donders says: "Astigmatism is either congenital or acquired. If it be acquired it is to be looked upon clinically as another form of disease," etc. I think this is the opinion that almost universally prevails with oculists up to the present time, so far as hypermetropic astigmatism is concerned. It is a congenital defect and does not progress or change without traumatism, or the presence of some other disease. Until recently I have accepted this idea without question. It had been my custom in prescribing glasses for the correction of hypermetropic astigmatism, either simple or compound, to assure the patients that they would not have to change their glasses. Within the past few years, a number of cases have come under my observation which have caused me to modify the above statement, and to question whether or not this defect is always congenital and unchangeable. The majority of these cases have been my own, which have returned after periods varying from one to five years, complaining of a recurrence of the symptoms that induced them to seek my advice in the first place. A number have come wearing glasses adjusted by other oculists whose skill I do not question. Of these I have not always been able to learn whether a mydriatic had been used or not. My own patients who have returned for examination, had been fitted under a mydriatic, and usually atrop. sulph. gr. iv to ʒi instilled into the eyes twice daily for ten days. I do not claim special skill in adjusting lenses, but do claim to have used ordinary care in this work. My practice has been to examine first with ophthalmoscope, then with test glasses use the mydriatic until the patient could answer promptly as to improvement by a change of .25 in strength, or a turn of 5 degrees in axis of cylinder. If anything has been written upon this subject it has not come under my observation. My object in presenting this short paper is to get an expression from members of this Society upon the question, Does hypermetropic astigmatism increase? My recent experience inclines me strongly to the belief that it does under certain conditions. I shall only present brief notes of three cases, the most striking I have so far observed:

Case 1.—Jerry H., age 17, Irish-American; bookkeeper, residence Chicago, was first examined by me March 18, 1882. Patient states that his sight has always been poor. He has worn glasses for a number of years, but is unable to read or do close work comfortably with any glasses he has tried. Eyes very irritable. V. = 20-80 either eye, and not materially improved by glasses. Atrop. used, but my notes do not show how long. Patient thinks his eyes were under the effect of the medicine about two weeks. Under the mydriatic, R. eye accepts + 3.50 ⊂ + 3. cyl. ax. 75°. L. eye + 4. ⊂ + 2.50 cyl. ax. 90°. Either eye, V. = 20-60. These lenses enabled the patient to pursue his work as bookkeeper comfortably until April 2, 1886. Eyes have become irritable again, so that he can not do his work. We can not improve upon the old lenses without the use of a mydriatic; a 2 per cent. solution of homatropin is instilled into the eyes at intervals of a few moments until about twelve instillations are made. Waiting forty minutes the eyes accept, R. eye + 3.50 ⊂ + 4. cyl. ax. 75°. L. eye + 4 ⊂ + 3.50 c. 90°. V. = 20-60.

These lenses were ordered, and served the patient well until April 13, 1891. Now complains that he can not see as clearly as he could when he began to use the last glasses. Testing his vision, I find it is only 20-80. The lenses are scratched in the center, and I infer that his lowered vision is due to this. As the patient needs new lenses, I decided to make another test, this time without any mydriatic. To my surprise, the patient now accepts R. eye + 3.50 ⊂ + 4.50 c. 75. L. eye + 4. ⊂ + 4.50 c. 90. V. = 20-40 either eye. These were ordered and are satisfactory. The patient, who is above the average in intelligence, is very much exercised about his eyes, but is reassured by the statement that the defect does not increase in adults, and by the fact that his vision is better now than it has ever been before.

Case 2.—Addie B., age 14, school girl; American; residence, Chicago. Was first seen by me Oct. 5, 1886. Father states that the daughter's eyes have never been strong, but she has been able to get along comfortably with her studies until recently. A few weeks ago, her sight became so blurred and she began to have such severe headache that she was obliged to give up using her eyes for any kind of close work. On examination, eyes free from external inflammation, but very irritable. Ophthalmoscope shows a high degree of hypermetropia, but no attempt is made to measure it on account of the irritable condition of the eyes. The right eye has a circular coloboma of the macula. The center of the coloboma about corresponds to the macula lutea, and is about twice the diameter of the optic disc. The edges of the coloboma are clean cut, presenting the appearance as if choroid and retina had been cut out with a circular punch to the sclerotic. A solution of atrop. sulph. gr. iv to ʒi was ordered to be instilled into the eyes twice daily. October 15, right eye accepts + 3 50, V. = 20-200; fixation peripheral. Left eye accepts + 5.50 ⊂ + 1.25 cyl. ax. 125°. V. = 20-40. The above lenses were ordered to be worn constantly.

Oct. 27, 1888. Patient returned complaining of symptoms similar to those complained of on first visit. She states that the glasses gave complete relief and enabled her to go on with her studies until a few weeks ago. Left eye now accepts + 5.50 ⊂ + 2.50 cyl. ax. 125° V. = 20-40. This lens was ordered. Oct. 29, 1889. Patient returned complaining of headache, and irritable eyes again. She states that the glasses ordered one year ago afforded relief until a short time ago. Left eye now accepts + 5.50 ⊂ + 3.50 cyl. ax. 125°. V. = 20-40. This combination was substituted for the second lens, and I have not seen the patient since. I urged her to call as soon as her eyes began to trouble her again, and I have recently made an effort to find her, so as to examine her eyes again, but was unable to do so.

Case 3.—Eddie H.; age 10; pupil; residence, Mendota, Ill. Was first seen by me Oct. 2, 1890. The patient is a robust boy, large for his age. The father stated that the boy had been having headache and trouble with his sight since he first started to school. The headache has become so severe that he was obliged to leave school. An examination of the patient's eyes shows the following manifest defect: R. eye = + 4. ⊂ + 1. cyl. ax. 70°. L. eye = + 4. ⊂ + 1. cyl. ax. 100°. 20-80 either eye. Under homatropin each eye accepts + 4. ⊂ + 1. cyl. ax. 90° V. = 20-60. As the ophthalmoscope showed about the same defect, the above lenses were ordered for constant use. April 25, 1892, eighteen months later, the patient returned. The father stated that the glasses gave his boy complete relief for more than a year, but that a few months ago the headaches began to trouble him again and were now as bad as ever. The patient now accepts + 4.50 ⊂ + 2. cyl. ax. 90° each eye. V. 20-60. These were ordered and the patient returned home. Sept. 25, 1893, seventeen months later, the patient came back again complaining of a return of the headache. As before, the father says that the new glasses gave complete relief for more than a year. The patient at this time accepts + 4.50 ⊂ + 2.50 cyl. ax. 90°, each eye. V. = 20-60. These were ordered and worn until Oct. 8, 1894, when the patient returns. The patient now accepts R. eye + 5. ⊂ + 2.75 cyl. ax. 90°. L. eye + 5. ⊂ + 3. cyl. ax. 90° V. = 20-60. The ophthalmoscope and ophthalmometer shows the same, except the latter instrument shows the axis of astigmatism, R. eye 80° and L. eye 100°, but the patient will not accept the lenses in this position. Indeed, he readily detects a turn of 5 degrees either way from 90 degrees with either eye.

In this case a mydriatic was only used at first examination—homatropin 2 per cent. solution. I do not believe that this drug will completely relax the accommodation in all cases, but when the defect, as

shown by the test lenses under it, agrees, as in this case, with the measurements made with the ophthalmoscope, I do not hesitate to prescribe. In four years the astigmatism increased from 1 D. to 2.75 and 3 D., or was it all there in the beginning and has it become manifest on the installment plan? This patient was not especially studious and did not use his eyes more than the average boy at his age.

Case 2, the young girl, was a pupil in the Chicago High School when I first examined her. She was then 14 years old, but small for her age. I did not notice at this time that her eyes were unusually small. At the last examination she was 17 years old and about as large as the average girl at 14. Her eyes are abnormally small in proportion to her size. She was bright intellectually. Said she had been studying hard and hoped to finish at high school that year. In the three years between the first and last examinations, there was an apparent increase of the astigmatism from 1.25 to 3.50 D. I say apparent, though I believe it was a real increase.

In the young man's case the time intervening between the first and last examination was a little over nine years. The apparent increase of the astigmatism was right eye from 3. to 4.50 D. Left eye 2.50 to 4.50 D. The first examination in each of the Cases 1 and 2, was at the age of most rapid development—at the age when the boy and girl are changing into the man and woman. Both had very imperfect eyes, and both were engaged in work requiring long hours at close work. These are the conditions most favorable, it seems to me, for bringing about the change the clinical histories of these patients seem to indicate.

Among several important questions these cases suggest, the most important to my mind is, What effect, if any, had the wearing of glasses upon the increase of the trouble? It has been claimed or suggested by some one that correcting high degrees of hypermetropia in children or young persons may arrest the growth or development of the eyes. If there is any truth in this suggestion, is it not a mistake to adjust lenses to such imperfect eyes? Would it not be better to proscribe books and close work and advise an active out-of-door pursuit?

REPORT ON CAR SANITATION.

BY GRANVILLE P. CONN, M.D.

CONCORD, N. H.

Presented to the American Public Health Association by the Committee on Car Sanitation, at the Twenty-second Annual Meeting, held at Montreal, Canada, Sept. 25-28, 1894.

A report upon this subject must include several topics; for in order to bring before the public a full realization of its importance, we must consider the construction, the heating, lighting and ventilation of coaches, as well as the methods of car cleaning now in use by the management of most roads.

This last is most essential, as it is the first principle of sanitation, without which nothing like a healthy standard can be assumed.

The problem of car sanitation is one of complex character and involves so many mechanical questions, that one can hardly be expected to bring out the whole of the subject in a single paper. I have endeavored to get the opinions on this subject from other members of the committee, but have not succeeded in doing so, as for various reasons the different members have begged to be excused, therefore I have selected from the opinions of sanitarians and practical mechanics, such quotations as seemed to have a concise, practical and unbiased bearing upon the conditions necessary to secure the sanitation of passenger coaches.

In the design of a car for the transportation of people it is important that it be constructed with a view to stability, safety and endurance. It must be constructed with a strength equal to the strain which is expected of it, in order that it may be safe to passenger and employe. This is important, for without strength and capacity for endurance it would be a veritable trap to every one having anything to do with it. It is virtually and for the time being a house on wheels, in which the varying number of people are expected to make their homes for a longer or a shorter period, according to the distance which they may be expected to travel. Therefore, like a house, it should be constructed upon sanitary principles, in which ventilation, heating and such conditions as will allow it to be kept clean are paramount factors in every case. Unless these sanitary principles can be carried out, and made permanent, then this house on wheels becomes unwholesome and unhealthy, and the conditions become favorable to disease, or of disseminating it, should a contagious or infectious malady find a place within its walls. Theoretically speaking, a room or a car into which a large number of people are to assemble should have left out of its construction everything that is calculated to foster or develop disease germs, therefore, the plainer it can be made, the less upholstery, carpets and curtains that are placed within, would seem to be the best calculated for health. Practically, however, the public demand something more than plain walls and plain seats, and forget the conditions necessary for sanitation in their desire for luxury. This is an unfortunate circumstance, but it is necessary to deal with the problem as it exists. Probably cars could be constructed with much less expense on leaving out much of the draperies, etc., that are now considered necessary; but as the public demand the luxurious apartments which we find in all well-appointed cars to-day, we shall be obliged to consider the different classes of coaches just as they now exist on most of our long lines of travel.

Referring to ventilation, it is now twenty years since the State Board of Health of Massachusetts instituted an investigation into the condition of passenger coaches. They found that the atmosphere of the ordinary coach contained from one to six times as much carbonic acid gas as other public assembly rooms, such as churches, theaters and public halls. The same year, 1874, at a meeting of the Master Mechanics' Association, the Master Mechanic of the Boston & Albany and also of the Old Colony Railroad, made a report on that subject. It was taken up by the Association, and considerable discussion followed. Some improvements came from this action, but since that period the progress of ventilation in cars has not been rapid, in fact it can scarcely be said that any improvements have been made. Recently, State legislation has placed the obligation upon the management to use steam heat, therefore, the necessity of further improvements in ventilation has become apparent to every one. In ordinary weather during the winter the problem of how to heat the car with steam and not have it too warm, is far

more difficult in solution than it is to prevent it from becoming too cold. These difficulties are largely due to the fact that the men who have charge of this work are incompetent to carry out the designs of the inventor of steam heat. They have little or no conception of what constitutes good atmosphere in a coach, and they care but little about their work except that the time goes on and they draw their pay. They have no instructor beyond the mechanic who simply shows them how to turn the valves which admit the heat and to shut it off, and the whole problem, as far as they are concerned, is how to keep heat enough in the car to keep it warm. The changing of the atmosphere of the car is of but little moment to them; they are constantly going in and out of the car at every station, and perhaps may be pardoned for not noting the atmospheric condition that obtains throughout the train.

Another fact in car sanitation, and to me, perhaps, the principal one, as it involves every principle of sanitation, is absolute cleanliness. This may be impossible in coaches, yet a near approach to it need not be considered impracticable.

Cleanliness is the first principle in sanitation, whether it be of cars or houses, and seems like a very simple matter. But when we consider that it involves in its principles, cleanliness of atmosphere as well as material, then the problem becomes greater, for in keeping the atmosphere of the car clean, as well as its floor and ceilings, you have arrived at what may be called true sanitation. The problem of keeping a car clean is greatly enhanced by the fact that very many good people allow themselves and their children when riding upon the trains, to become slovenly in their actions, throwing things upon the floor of the car that never would be permitted in an ordinary dwelling house. Why is it that people are so forgetful of good sense and good manners when riding upon trains is past comprehension; yet, we see it every day, and the coaches become excessively filthy from that cause alone. It may not be easy to break up such habits, yet, if the trainmen formed habits of cleanliness in regard to the coaches which are under their care, it would have a very beneficial effect on the passengers. In the Pullman and Wagner coaches, where porters are employed to wait upon passengers and keep the car clean, when the occupants so far forget themselves as to cover the floor or carpet with the refuse of orange, banana or apples, nut shells and other things which render a car unwholesome or unclean, and the porter goes around with his dust-pan and brush cleaning it up; it does not take a great many miles of travel for such people to see the error of their ways and to discontinue them. The same might be true of the ordinary coaches if the brakeman or person in charge should perform the same acts, for people naturally would become ashamed of throwing things upon the floor for another person to clean up in order to render the apartment comfortable.

Little need be said in regard to heating of cars, as that has become a question of legal importance. The accidents by fire became so numerous that the different State Legislatures took it in hand, passed laws doing away with the ordinary stove, and substituting steam heat. Unfortunately, there was no concert of action with different roads in the use of steam heat, as each road experimented for itself, the consequence being there are many different methods of transmitting steam through the cars. Which of these is the best I am not able to state, but it is to be hoped that some uniform method will be adopted by which all roads will be able to effect interchange of cars, and that the instructions which should be received upon that particular subject, shall be so uniform that there will be no difficulty experienced in keeping cars properly warm and ventilated.

To digress a moment, I would add that it has been found necessary to open schools of instruction in the use of the air-brake, and I am told that old and experienced trainmen after attending these schools have been surprised to find how little they knew of the practical application of what was supposed to be merely an automatic machine. Now this instruction is secured by fitting up a car with all the mechanism of the automatic brake, and having a thorough mechanic for a teacher, and why not combine with that the teaching of car sanitation, to the extent that the trainmen may fully understand how to use such devices as are now found on most passenger coaches?

In regard to the different systems of ventilation, several experimenters and inventors have gotten up systems of their own, had them patented and endeavored to put them on the market. Some of them are very complex and all of them require some knowledge of the subject, else they can not be made useful. All of them involve extra expense in the construction of a car.

The question of how to ventilate a car is one which the mechanic and sanitarian must bring out together. It seems as though it would be quite impossible to invent any system that will change the air of a car while in motion and at the same time be effective while it is standing still. With electrical power it may be possible to place fans in a car, the same as you do in a house, that will be effective when the car is standing still, but when the car is moving the pressure of the atmosphere upon the outside is so great that considerable change will take place inside the car. Then again this pressure of the atmosphere is so different when the car is moving slowly, than it is if the car is moving rapidly, that it brings up another point in the problem of ventilation to be solved by the practical mechanic.

Before the use of the power brake, the duties of the trainmen were almost constant and imperative, but with the advent of the automatic brake his duties were made much lighter and less exacting. It is true that with the introduction of the various improvements that have been or may be instituted, a higher order of intelligence may be required than was necessary to assist in stopping or starting a train, yet that does not prevent the average trainman from doing good work, providing he has proper instruction.

The *Railroad Car Journal* publishes the report of the Committee of the Master Carbuilders' Association, from which I quote at length:

"In all modern systems of ventilation, sanitary engineers endeavor to have a plenum instead of a vacuum, or, in other words, to have a slight excess pressure inside of the building instead of a slight vacuum. With a plenum there can never be any cold drafts or admission of dust, smoke or cinders, for the reason that the pressure would always be driving the air outward through every crack and opening. With a vacuum the reverse is the case, and dust, smoke and cold air will find their way in at every crack. It is very desirable that the windows of passenger cars be so arranged that they can be locked fast in winter time, to prevent one obstinate passenger interfering with the comfort of the whole

car load, but this can only be done when a sufficient supply of fresh air is constantly being furnished to the passenger, comfortably warmed. The opening of the doors at stations is also a great interference with a uniform system of ventilation. This can not be avoided, but the evil effects of it can be largely overcome by building the cars with an inner swinging door. Most of the modern larger passenger cars having smoking rooms, double saloons and heating apartments, can be easily fitted up with a swinging door at the end of the passage in between these compartments, which will act as a kind of air-lock and prevent a good deal of discomfort otherwise unavoidable. A convenient way of arranging the windows so as to avoid the drafts and interference to the comfort of the passengers in the winter time, would be to have the outer sash arranged, as is commonly the case now, with the inner sash arranged so that when lowered they will lock themselves tight and can only be released by a lever at the end of the car, attached to a locking bar running the full length of the car on either side. These windows could be kept raised in summer time, the outer sashes being so that the passengers can raise them or lower them as they please. In the winter time, when these sashes are lowered no window could be raised.

"To summarize, the ideal conditions would be as follows:

"1. The admission of thirty cubic feet per minute per passenger of fresh air, and the carrying off of an equal amount of foul air, summer or winter.

"2. The fresh air so admitted must not be moving at a speed of more than three or four miles per hour in winter time.

"3. Fresh air admitted must be of a temperature in winter time of about 70 degrees Fahr.

"4. Fresh air so admitted in winter time must have added to it a proper degree of moisture for the temperature at which it is admitted, according to the average humidity of the atmosphere, when at 70 degrees in the climate in which the cars are running.

"5. No system of winter ventilation can be more successful unless means for the fresh air supply are provided independently of and separately from the windows and doors, as well as the ventilators for carrying off the foul air.

"6. The fresh warm air should be distributed through as many openings and as low down as it can be conveniently arranged for, and the foul air should be carried off through as many small openings in the roof of the car as can conveniently be arranged for in winter.

"7. The ventilation should be entirely independent of the speed of the train and act as well whether the car is standing or running.

"8. The ventilation should be so arranged that there will be a plenum or slight excess of pressure inside the car, so that all drafts will be outward instead of inward, and smoke and dust thus excluded.

"9. It is most desirable that double windows should be used, and so arranged that they can be locked fast in winter time, but readily opened in summer time.

"10. It is most desirable that an inside swinging door be used, so as to form an air-lock or inside vestibule, to prevent the admission of cold air and dust every time the doors to the platforms are opened."

In arriving at these conclusions this Committee had an investigation made under the supervision of an expert, and incorporated into their report something of his work, and the reasons for summarizing such ideal conditions as they have deemed necessary for perfect ventilation.

The Committee add the following:

"It may be argued that there is no use for any such system of ventilation as this, that the present arrangements for the ventilation of passenger cars are good enough, and that nobody is any the worse for the present state of affairs. To show that this is an entirely wrong position, your Committee had a number of tests made to show the degree of foulness of the air in sleeping cars, and day coaches, which tests have been under the supervision of Mr. Wm. Forsyth of the C. B. & Q., through the kindness of Mr. Rhodes. Pure air contains from three to four parts in ten thousand of carbonic acid, and at 70 degrees Fahr. an average condition of moisture would be from four to five grains of water per cubic foot.

"Dr. Angus Smith made a series of careful experiments in lead-lined air-tight rooms for the purpose of seeing how long healthy people could exist in an atmosphere having an excess of carbonic acid and moisture. As the result of his experiments, it was shown that it was very unwholesome to breathe an atmosphere having more than seven parts in ten thousand of carbonic acid, and that an atmosphere containing ten parts in ten thousand could not be endured by delicate people for long without injury, and that as the presence of an excess of carbonic acid is a direct indication of the presence of microörganisms, commonly called disease germs, the injurious effects are not merely limited to the poisonous influence of carbonic acid, but that the danger of taking organic diseases was very largely increased. It was further shown that the senses are a very unreliable guide in judging of the foulness of the atmosphere, and that people who remained in a room in which the atmosphere had become gradually fouled would hardly notice its foulness, whereas outsiders suddenly coming in would be almost suffocated.

"Microörganisms, or disease germs, are not given off to any harmful extent in the exhalations of healthy human beings, but they are given off in large numbers in the breath and spittle and evaporation from the skin of unhealthy persons. Especially is this the case with people suffering from tuberculosis, whooping cough, fevers and so on, and the disease germs grow and multiply very rapidly in a foul moist atmosphere. To quote a prominent naval surgeon: 'The road is short, straight and sure from vomica and mucous patch to the receptive nidus in another's body. Who that has ever had forced on him an aerial feast of cabbage, onions, garlic, alcohol, tobacco and gastric effluvia of an old debauch, can doubt that aqueous vapor can transport microscopic germs by the same route?' (A. L. Gihon, in an address before the Pan-American Medical Congress in Washington, D. C., 1892.)"

Experiments made in Europe on animals which were inoculated with a preparation from the dust beaten out of the cushions of railroad cars in ordinary service and which cars were not known to have carried sick people, showed that the most of these animals which were inoculated died of violent diseases. Few of them lived long enough to die of tuberculosis—none of them survived. As these microörganisms are in the air and simply settle on the dust, all this goes to show how very necessary indeed it is to carry off the foul air, and that, to quote a Southern physician:

"The movement of vast masses of people annually from one section of this broad country in search of those climatic influences modifying the course and progress of disease, has become, from a sanitarian standpoint, a great unsolved problem, namely, that of accomplishing the proper ventilation of cars by the introduction of pure air, free from dust, cinders, smoke and so on, and at the same time the withdrawal of the impure air arising from the natural emanations of the body, as well as the more serious dangers accruing from chronic or contagious influences."

"In all these devices which depend upon the speed of the train for their action, and where the air intakes surround the stovepipe, every time the car stops the ventilating process ceases and may be reversed; at slow speed it will be almost inoperative.

"Great improvement could, however, be made in the condition of the air in our crowded passenger cars if the trainmen were compelled to pay proper attention to the ventilators; a regular set of instructions should be furnished them for their guidance, and division officers should be instructed to pass through the train at every opportunity and report cases where the ventilators have been neglected and the air is overheated or foul, to the division superintendent for discipline. The men would then soon learn to attend to this part of their duty. Sleeping car companies should have a code of rules printed and posted in the cars, and their porters and conductors should be made to observe such rules. One specially important thing is not to open the ventilators on the windward side of the train, otherwise with drop sash or trailing sash ventilators, down drafts and cross drafts are unavoidable."

The above extracts from the report of the Committee of the Master Car Builders' Association has much to commend itself to our notice, as it comes from the best and most advanced class of practical mechanics. As a rule, such men are not visionary, but reason from cause and effect, therefore their opinions are entitled to our consideration. I under-

stand the report was written by Master Mechanic Sanderson, of the Norfolk and Western Railroad of Virginia; yet when asked his personal opinion of its being practical to carry out such ideas, and use the average trainman to accomplish the work, he remarks in rather a sarcastic manner: "I wonder what the A. R. U., or any other railroad organization, would say if we required our immaculate brakeman to do the chores in the railroad cars?"

Another member of this Committee, when asked if he believed it was possible to carry out such an ideal system as the report would allow the public to expect would be in use in a few years, says: "I would say in answer to your first question that I do not believe, as a railroad mechanic, that it will be possible to introduce and have accepted by railroad managers, the ideal conditions in a passenger car as expressed in the paper that was read on this subject. I do believe that if our trainmen were educated to make better use of our present facilities there would be less complaint. They have been relieved from year to year of their former duties, until they feel that all they need to do is to wear a uniform."—Mr. West, Master Mechanic, N. Y. O. & W. R. R., Middletown, N. Y.

Undoubtedly this is true, and we are all the more ready to believe its truth after having once asked one of these uniformed "Mikados" to ventilate the coach. That look of pity and condescension makes an impression never to be forgotten.

In support of that part of the report which I have quoted—relating to the experiment on animals inoculated with a preparation of dust from passenger coaches—I will give an extract from the report of scientists who have recently conducted a series of experiments, under the direction of the Imperial Board of Health of Germany, as to the danger arising from the dust in railroad carriages. Their results show a decided risk involved in traveling under the present sanitary conditions of coaches:

"The dust was collected in each instance from a square meter of surface, and from forty-five compartments, representing twenty-one carriages. The inoculations were made upon guinea-pigs. Many of them died of various diseases, and the rest were killed. Three only were found to have tuberculosis. The number of bacteria was largest in the fourth-class cars, and grew less with each rise in grade of the compartments. In the fourth-class cars the number was estimated at 12,624 per meter; in the third-class, 5,481; in the second, 4,247; and in the first-class, 2,583. On the seats and upper walls the numbers varied in the four classes from 2,646 to 29, while the roof was almost free. Though the third- and fourth-class carriages were the most infected, it was much easier to clean them, as they could be washed with hot water and soap, which could not be so vigorously applied to the better class carriages owing to the carpetings and upholstery."—(*Boston Medical and Surgical Journal.*)

The following letter written on a trip to the Eastern States, says:

"In our sleeper were three consumptives returning home to die, and that alone was depressing enough, but when, on getting up in the morning, one sees a considerable amount of dry, yellow sputum on one's *vis-a-vis* neighbor's bed-linen, it is neither dainty or reassuring. Morning cogitations, usually so pleasant, are apt to turn to the uncomfortable possibility of all the bedding in the car being subjected from time to time to the same infection, and being probably imperfectly washed or simply rinsed. Then it is impossible to clean the upholstering and carpeting without taking them out of the car, and an infected sleeper should be dangerous, as the continual vibration keeps the dust and bacteria in the air. The space is also necessarily confined. Moreover, travelers are apt to catch cold from drafts and from sleeping close to the windows, thereby rendering the mucous membrane receptive to germ implantation. They order these things better in Europe; on some of the continental lines special coaches are provided for consumptives, and these are constructed with particular reference to ready cleansing and disinfection at the end of every trip—which, it should be noted, are much shorter than the 'runs' in this country, and the need of precautions is, therefore, and for so much, greater here than abroad."—(Dr. Douglas W. Montgomery's letter to the *Pacific Medical Journal.*)

Dr. S. S. Herrick, of San Francisco, read a paper before the Section on State Medicine, at the meeting of the AMERICAN MEDICAL ASSOCIATION the present year, entitled, "Common Carriers as Disseminators of Contagion."

The writer dwelt particularly on the disposal of excretion of the people on inland waters and railway coaches; believing that certain communicable diseases whose contagious properties are discharged from the alimentary canal are liable to reach the alimentary or respiratory tract of other persons if not intercepted or destroyed, and cholera, typhoid fever, dysentery, intestinal tuberculosis and other filth diseases are notable in this way.

He says: "Companies who provide meager accommodations for passengers were properly censured, and should be held justly responsible if inadequate remedies were provided for their patrons."

Discussions by Drs. Ruggles and Cochran, Davisson and Stoner, all of whom were in accord with the opinions advanced by Dr. Herrick. These men, while enthusiastic supporters of preventive medicine, are gentlemen of sound judgment and are not carried away by any desire for notoriety. They believe the State and Federal authorities should be ever on the alert to secure health for the individual, and that it is a duty which they owe to the people of the country to have a watchful care over the transportation company as well as the municipal lines governing health officers.

The *Ohio Medical Journal* says of the prevention of consumption:

"We do not deem it wise or prudent to invade the homes of tuberculous patients for the purpose of securing disinfection or the isolation of the sufferer. The instruction of the patient and his household, by his physician, in the necessity of prophylactic measures, is at present sufficient. But we believe that a vast deal of good might be done by the exercise of strict sanitary measures against the contamination of rooms in hospitals and hotels and the berths in sleeping cars. The most carefui cleansing and disinfection of apartments occupied by consumptives should be required before other individuals are permitted to occupy them."

As we have said before, in this report, cleanliness is one of the first principles of sanitation; whether it be a car, a house, an office or a work shop, the same principle holds good. In the construction of coaches for passenger use, something should be done to render the cleansing of the car a matter of small expense, for while in the process of construction, little things might be done that would add to their convenience, healthfulness and cleanliness.

All passenger cars at the present time are constructed with water-closets; the floor of such closets and a few inches of the side or mop-board should be covered with copper, as an ordinary wooden floor will soon become filthy and can never be made clean. Odors will always be given off from an ordinary board floor whenever the temperature rises to that of summer heat; but if the floor be covered with sheet copper, hot water, dry steam and chemicals may be used, leaving it without any absorbing surface to develop odors which may be latent in cold weather and very active on a hot summer day. If the designer and purchasing agent give attention to this in the

first instance, the extra expense will be little or nothing, and will add very much to the efficiency of the car when the rules of sanitation are applied. As cars are now heated with steam direct from the engine, and as these pipes pass through water-closets for the purpose of protecting them against the cold weather, I can see no reason why taps may not be placed in those pipes in the water-closets and used for the purpose of cleaning them with hot steam; and it certainly could not be but very little extra expense at the time of the construction of the car.

Dr. S. S. Herrick, of California, in commenting upon a statute law of that State relating to the maintenance or commitment of a nuisance, remarks:

"Obviously, travelers themselves should not be held responsible for committing a nuisance, so long as transportation companies provide no facilities for obviating the same; and the legislation should be aimed directly at these companies, holding them responsible and requiring them to provide an adequate remedy.

"It is well understood that the law must not ordain what is impracticable, and equally plain that no serious difficulty and expense would be involved in abating such nuisances. No mechanical difficulty exists for a steamboat or a railway coach to have its closet provided with a closed receptacle, having suitable means for deodorizing, disinfecting and ventilating, and for discharging the contents into some proper place at short intervals. The details of a contrivance suited to such a purpose need not here be entered into; they belong to the inventor and mechanic rather than to the sanitarian as such.

"Aside from considerations of health, it seems strange that respect for common decency has not abolished a practice in travel by land which would have brought a blush to common carriers in the good old days of slow coaches. While inventors and builders of palace cars are doing so much for the comfort and convenience of passengers in other respects, they adhere to a form of closet from which travelers must be excluded at the time when it would be most acceptable (halting at large stations), and which scatters filth and disease along the route. It is to be noted that cholera still lingers in Europe, and meanwhile we must not consider ourselves safe here within two weeks' travel by steam; while the other filth diseases, like the poor, are always with us.

"In my judgment the time has come for sanitarians to speak plainly and forcibly on the subject, and to demand of legislators a specific remedy which courts will be bound to apply to this class of offenses against health."

I understand several roads are making use of compressed air for the purpose of cleaning the draperies and plush covering of the seats; and that a plant for that purpose can be arranged to be effective, with small expense. If this is true, and I see no reason why it is not, it should generally be used, for thorough cleansing with fresh air would be a most valuable disinfectant.

The vestibule train has become very popular, no one doubts its efficiency as an easy riding coach, and it insures perfect safety in going from car to car, but as an object lesson for the ventilation of cars it becomes a failure, inasmuch as it simply ventilates from one car to the other. Some air will pass into the vestibule section, but as that section has less width than the car itself, the pressure of the atmosphere extending to the car is much more lessened than it is upon the sides of the car itself, therefore but little air is forced in from that section of the construction, as the ventilating property of the vestibule is lost, and aside from that it may be overcome by the extra heat of lighting.

This leads one to consider the lighting of cars. Nearly every large road has been experimenting with different methods of lighting coaches, and car companies like the Pullman and Wagner have done the same. Whether these experiments have been conducted in the light of sanitation, or as a question of expense may be a matter of doubt, although it is probable that the safety of the car from destruction by fire has entered into the range of experiments. Gas and kerosene lighting, while moderately expensive, are not only dangerous by reason of their possibility of fire, but the extra heat which they occasion in the car in the summer time proves a very serious obstacle to the comfort of the passengers. Then again, the destruction of oxygen by gas or kerosene lighting increases the amount of carbon dioxid in the atmosphere of the car, oftentimes to a dangerous extent, and in that way the health of the passengers is seriously threatened unless there is a large amount of fresh air introduced continuously.

That electric lighting is the ideal of the present time perhaps no one will dispute, unless the expense of the same is taken into account. So far as I can learn, none of the devices for electric lighting have yet been brought down to the maximum of the manager's idea of expense, and therefore, some other method will find favor until the public demand safety in lighting as well as in heating coaches.

It is also well to note that the public are critical regarding the water supply. Some years since, Dr. R. H. Reed of Ohio, in investigating this matter, found that the water-tanks of ordinary coaches, and sometimes those of palace cars were notoriously filthy. The water supply must of necessity depend largely on the character of the supply at given points along the line. When cars are cleansed and the water tanks refilled, the ice supply depends upon the same conditions, but there can be no excuse for filthy tanks any more than in public or private houses. There are enough men employed about the trains to see that every tank is made clean day by day, and not to do so and thereby endanger the health of the traveling public becomes criminal.

In conclusion, I have but little to add, as, until the use of such devices for lighting, heating and ventilating we now have are fully understood and appreciated by the average trainman, who should be held responsible to his superior for the safe condition of his coach from a hygienic and a mechanical point of view, it is useless to assume that a more elaborate mechanism will find favor.

Nothing as yet approaching an automatic system in heating, lighting or ventilating of a car has been placed before the public, but as it is only a comparatively short period since automatic brakes and couplers have been placed upon the market, we may confidently look forward to the time when the public demand for hygienic improvements will evolve from the mind of man, some plan or system to meet the emergencies of the occasion.

In order to do this, effectually, some one connected with the road would have to instruct the employe in the use of hygienic appliances, the same as is now necessary in the use of automatic brakes; and it would seem quite practical that all roads having a surgical department should extend this work into the domain of hygiene, and give the surgeon-in-chief authority to inspect, instruct and to hold responsible such employes as are in any way concerned in maintaining a healthy condition on our trains. The surgeon, more than any other person connected with railroads, appreciates the hygienic condition of the coaches, stations and grounds of our railroads, for

in case of accident he has much to contend with that is unknown to the physician and surgeon called to see those injured in ordinary accidents, and, therefore, will always be on the alert for all sanitary improvements.

However it may be brought about, the employe should be taught how to make the best use of all the devices in use to promote the sanitation of cars; and should be held responsible for any unsanitary conditions arising by reason of his negligence.

SOCIETY PROCEEDINGS.

Chicago Academy of Medicine.

[Reported exclusively for the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.]

(*Continued from page 728.*)

MORAL TREATMENT OF EPILEPSY.

DR. H. M. BANNISTER—The subject allotted to me is a limited one. The epileptics we meet with in general practice hardly require any moral treatment. In a few cases moral reform is necessary, and in spite of all we may say of the incurability of epilepsy generally, is sufficient for all purposes. The epilepsy in these cases is only an episode, a result of excesses, sexual, alcoholic, etc., and the epileptic habit not being set up, a moral reform cures the disease. I am satisfied that I have known several such cases.

Moral treatment, properly so-called, is applicable solely to epileptics who have undergone mental deterioration, or who are mentally below par from the beginning. These cases require guidance and control. I shall speak, therefore, of this class; insane or semi-insane epileptics.

It can readily be inferred from what has already been said this evening, that epilepsy is not in itself a disease, but is merely a symptom of cortical irritability. The theory now generally accepted is that epilepsy is primarily a cortical affection; though I do not say that there may not be exceptions, yet that is the rule. When the epileptic lesion, whatever it may be, involves the psychically functioning elements of the cortex so as to bring the subject within the class of which I speak, psychic irritability is the result, and we may say in general terms that irritability is the key-note of the epileptic character. This is the indication for moral treatment, and the reason why in many of these cases it is even more important than medical treatment. Many, even of this class, are insensible to or intolerant of the ordinary remedial agents, and moral treatment is the only practicable resource. This psychic irritability shows itself by its reaction on the physical system, often in a very marked way. It is well known to those who have had to deal with epileptics *en masse*, how readily they react to all sorts of suggestion. It is often observed that one epileptic having a fit in a ward will seem to cause others to have them. The effect of operative procedures on the attacks is also in point. While I have never seen permanently good results follow any operation on old confirmed epileptics, I have seen just as good temporary ones from slight surgical procedures, such as setons, as from the most radical cerebral operations. This fact has been remarked by others, among them Dr. L. C. Gray, of New York.

Hysteria has been mentioned this evening as a complication of epilepsy; the fact is the two conditions continually overlap, and moral treatment is required for both,

Here I may mention another point, in regard to which I think erroneous impressions exist. By many, unconsciousness is made the criterion of epilepsy, in the post and pre-epileptic states, and all that is done by the individual in these conditions is called automatic. If this were true, moral treatment would be useless in these conditions, but according to my observation, and I think this has been extensive, it is not generally true. Often there is not even subsequent amnesia, and I am not prepared to say that consciousness is necessarily or invariably lost in the epileptic attack itself. Even the subjects of epileptic furor are more or less susceptible to prudential considerations. I have often noticed epileptics in that condition avoid attacking other patients who they knew would be likely to do them injury. I have had the testimony of epileptics themselves as to this fact, given in such a way that it could not be doubted. (Here Dr. Bannister narrated an illustrative case.) This is probably the secret as to how some of these patients are managed outside of asylums; but while intimidations and force fall under the head of moral, or, perhaps we should say, immoral treatment, they would be out of the question in the proper management of these cases.

I have spoken of the epileptic character and said that its key-note was irritability. As ordinarily described in text-books, it is a very unamiable character. It is admitted, however, that there are exceptions, and one Italian author has estimated the proportion of epileptics who are altruistic as about 16 per cent. of the whole number. I should say that under proper conditions and taking account of and providing for the predominant element of irritability, we can find a much larger proportion than that. Many apparently very vicious epileptics, under judicious management and proper conditions, develop many very amiable qualities. An insane or mentally deteriorated epileptic still possesses his natural disposition, *plus* the irritability and the mental weakness. The latter is comparatively unimportant and may even aid in his management; the irritability must be controlled largely by moral measures. I have found it best to treat them as reasonable beings, explaining to them that their physical disease necessitated certain restrictions which had to be enforced. Then by granting them all the privileges I could, consistently, with their welfare and that of others, letting it be understood that it was as a favor, not as a right, I made friends; while the opposite course of giving them liberties as a right, and having to restrict them when they were least fit to be reasoned with, made them vicious and unmanageable.

The very marked religious tendency of epileptics, so often spoken of, and to their disadvantage, may often be utilized as a valuable aid to treatment. They are generally sincere, and their inconsistencies are the result of their irritability and disease. As religion is one of the greatest social forces in the world, it is not hard to see how it may be of advantage here. In individual cases I have seen it of the very greatest value. (An illustrative case was given.)

I believe the colony treatment the best that has yet been devised for a large part of the mentally deteriorated epileptics. They are not wanted in the insane asylums, and there are good reasons for this, both on account of others and themselves. Yet if the colonies are to completely relieve the asylums of this class, there will have to be some restrictive arrangements for a certain proportion that can not safely be let go, at all times, at large.

OPHTHALMOLOGIC RELATIONS OF EPILEPSY.

DR. CASEY A. WOOD—I feel that I ought to confine the few words that I have to say to the ophthalmologic relations of this subject, because during the last few years I have given some attention to them. There is, perhaps, no man in this country who has studied this subject with the fullness which Ranney has, and there is no one who has given us proportionately fewer results than he has in his papers. I have had occasion to operate on a half dozen cases of supposed eye-strain due to inequalities in the action, and alteration in equilibrium of the external ocular muscles, and my conclusions are that any other operation of equal severity would have brought about the apparently beneficial results that I obtained in these cases. Out of this number, there has been one case which up to this time I regard as cured, but inasmuch as the case has only been under observation for a year, I perhaps ought to wait longer before deciding positively as to a cure having been effected.

In looking at the literature of operations for idiopathic epilepsy, I find that a great many operations performed on perfectly normal organs have resulted in cures of the disease. I presented this observation in the form of an appendix to my paper, which appeared in the *New York Medical Journal*, and suggested that there should be some regularly instituted operation for the treatment of idiopathic epilepsy. I think if we were to remove small patches of skin from various portions of the body, extending the surgical treatment over six months, that we would get about as good results as from operating on the eye muscles or any other organ of the body. I do not wish to enlarge upon the ophthalmologic part of this debate, but it seems to me that one important point has been overlooked, and that is the possibility of *spontaneous cure* in epilepsy. There are a great many cases mentioned in literature. I have been able to find more cases of spontaneous recovery from idiopathic epilepsy than I have, for instance, from the results of operations of any sort on the eye. I can point out to you cases where people have recovered from idiopathic epilepsy where nothing whatever had been done,

or *where the last thing done could not have borne any relation to the causation of the epilepsy.* I think, also, in this matter of epilepsy, we should regard with a great deal of suspicion any operative procedure, whether on the eye, nose or throat —no matter where it is. I quite agree with Dr. Brower and others in that respect. I have on hand now, a small boy, from whose middle ear I removed a number of granulations nine months ago. The boy up to that time had attacks of epilepsy every two weeks. He has not had any since. Whether it was the moral effect I do not know. The bromids, in this case, have been stopped. I think what Ranney has given us simply points to one great fact; that if we do something for the patient and tell the parents and neighbors that he will probably get well, it will have a marked influence upon the epilepsy, even if it does not entirely cure it.

MEDICINAL TREATMENT.

Dr. Daniel R. Brower.—To discuss the treatment of epilepsy in ten minutes is certainly a task that I am altogether unable to perform. It has been said by one of the preceding speakers that epilepsy is not an entity; this I indorse. It represents an irritable condition of the cells of the cerebral cortex, and these irritable cells may be thrown into a state of commotion at any point and by any one of the peripheral end organs of the body, and develop an epileptic attack as a result. These patients are intensely emotional; they are, therefore, most susceptible to suggestions, and in estimating the value of any treatment this fact must be borne in mind. I have had sometimes good results in experimenting with these patients, from the simple administration of what was practically nothing, but given with suggestion great results would follow. There is one important point in the treatment to which I wish to call attention, and that is the necessity of treatment of the aura.

These epileptic attacks, I care not what their foundation may be, after a while become purely a matter of habit, and while, as Dr. Lydston has said, we may remove the cause of the disease, the habit goes on. By the successful treatment of the aura, we may sometimes break up the habit. Just how the aura is to be treated depends very largely upon what it is. I have under observation at the present time a young man whose aura begins with a peculiar sensation and twitching of the hand, and pressure made at the wrist or somewhere on the forearm will arrest the progress of the paroxysm. So he carries a stout string about his wrist and jerks it the moment the sensation is felt, and this prevents the development of the paroxysm. A good many of these expedients might be suggested for this purpose. Unfortunately for these patients, a certain proportion of them have no prodromal symptoms, and in such cases treatment before the attack can not be instituted. Medical treatment in the interval between the attacks is then the only indication. And here comes in the question of the possible etiologic factor. What is it that, acting upon the irritable cerebral cells, develops the paroxysm? Every one knows that each case must stand by itself. As regards the importance of the etiologic factor—auto-intoxication—discussed admirably by Dr. Evans, I believe it plays an important part in the development of the paroxysm, and I think it is most important to watch carefully the condition of the gastro-intestinal tract; frequently the best we can do for the patient is to administer gastro-intestinal antiseptics. Unfortunately, as you know, we have no absolutely reliable remedies of this class, but I think excellent results can be obtained by the use of resorcin, beta-naphthol, the sulpho-carbolate of zinc, and salophen. Some one or more of these intestinal antiseptics, either administered separately or in combination, will produce marked improvement in the condition of the intestinal tract, stopping intestinal fermentation, and diminishing the frequency of the epileptic paroxysms. A very good combination, in my judgment, is resorcin with the sulpho-carbolate of zinc. Then another important thing to consider is the necessity of watching renal elimination. I think there is too little attention paid to this. I had an epileptic patient in my office, a man weighing 175 pounds, who only eliminated 400 grains of solid matter from his kidneys during the preceding twenty-four hours. This is a common experience in epilepsy, hence the necessity of some kind of medicine directed to this important function. I think one reason why the formula of Brown-Séquard has benefited so many of these patients is because the iodids and carbonates, renal eliminants, are used with the bromids. Everybody recognizes the value of the bromids, but I am free to confess, the more I have to do with these patients the less confidence I place in these drugs, and I certainly do not give them in the doses that I formerly did. The mental deterioration from excessive use of the bromids makes the second stage of the epileptic worse than the first. As to the value of the several bromids, my preference is for the bromid of sodium, I presume because I regard it as less destructive to general nutrition or to the muscular tonus of the body than bromid of potassium. I prefer ammonium bromid in the cases of petit mal, and of nocturnal epilepsy. I have had very satisfactory results from a combination of ammonium bromid with antipyrin suggested by Dr. Wood, of Philadelphia. In cases of petit mal and of nocturnal epilepsy, I have used the treatment suggested by Trousseau, that is belladonna or its alkaloid, which I usually combine for this purpose with ammonium bromid.

Chloralamid is a valuable addition to the treatment of epilepsy, especially in the nocturnal form, and in those patients who sleep badly. I prescribe alteratives in addition to the general treatment suggested; I prefer as an alterative the chlorid of gold and sodium. I think there is in epilepsy, not only the condition of cells already mentioned, but also a chronic degeneration of the neuroglia, and this drug, I believe, is of some advantage in interstitial inflammations, not only in the brain but in the spinal cord, in the kidneys and in the liver. It is to a certain extent a cerebral tonic.

Lastly, I use electricity, the galvanic and static. I use galvanic currents of high ampèrage by longitudinal application. The anodal electrode, twenty centimeters in diameter, is applied to the head, and the cathode, ten centimeters square, is applied to the cervical spine. A current of ten to fifteen milliampères is used. These high ampèrage currents have some modifying influence over the irritability of the cortical cells, and inasmuch as such a high ampèrage current must have at least a catalytic, if not an electrolytic effect upon the brain, I believe it does modify the nutrition of the interstitial tissue.

Dr. James G. Kiernan—Epilepsy illustrates very strikingly the influence of the factor of personal equation, the factor of the moral influence as pointed out by Dr. Bannister, and the factor of the constitutional influence of the operation or the medicinal treatment *per se*, as mentioned by Dr. Wood. With reference to the question of curability, there are several things to be considered. In the first place, it is the grand mal which strikes the majority of people as the great evidence of epilepsy. The average ophthalmologist—although we have had no illustrations from the ophthalmologists this evening on the reflex hypotheses—takes it for granted that when the grand mal disappears the epilepsy is cured. Behind that are hysterical, sensory, mental and petit mal phenomena, and finally, which is ignored in the vast majority of cases, nocturnal epileptic phenomena. Until you can show that every one of these has disappeared, you can not say with any degree of positiveness the patient is cured or even ameliorated, because the grand mal is the smallest part of the problem.

With regard to traumatic epilepsy, I fully agree with Dr. Lydston that the sooner the operation is performed, the less chance will there be of the epileptic habit being formed. I do not believe when the epileptic habit is once established, that you can ever cure, in the true sense of the word, a case of epilepsy; at the same time, I do think every epileptic should have his intestinal canal, his eyes, and every other organ put in shape.

In reference to the point raised by Dr. Evans of auto-intoxication, while I agree with him from many standpoints, I desire to call attention to one fact which he has perhaps unintentionally omitted, that the epileptic status can be best explained along the line which he has stated, and that every investigation along the auto-intoxication line has simply served to corroborate the opinion of Meynert, based on clinical phenomena alone.

I heartily agree with the position taken by Dr. Brown, that the great tendency is to regard epilepsy as the grand mal type and to ignore the sensory phenomena, the aura and other conditions. I remember being in a case once with Mills, of Philadelphia, and Spitzka, of New York, and two European physicians. We were able to make a diagnosis from the evidence in the case that the man had epileptic insanity, but the verdict of the jury was otherwise. The case finally went to the Supreme Court, and the Supreme Court did not agree with the jury because the verdict was against the facts.

With regard to Dr. Moyer's position, that no epileptic should be held responsible who has committed a crime of violence without rational motive, I most heartily agree. I think in the condition of amnesia referred to, where there is general irritability, the epileptic is conscious, but I do not

believe after careful examination of these cases that he is conscious in the other conditions. In dealing with that state I am taking into account a factor which is often ignored. In somnambulism a man may rise in his sleep, may be conscious, may do everything and forget all about it. I do not think, after investigating the condition of epileptics, you can regard their condition as conscious outside of an irritable state with consciousness. We must remember this, that a large number of our acts belong to the subconscious category. We register an immense number of acts without being conscious of it and that registration rises into consciousness and occurs in morbid conditions as a state of delirium. That being the case, it can be seen how many complicated acts can be performed by an epileptic without assuming the condition of amnesia. With regard to the latter condition, I do not think a single attack of that kind is characteristic of epilepsy. We may have temporary amnesia. I can recall instances where I have been awakened, have acted, returned to sleep, and forgotten all about it. I think every one has done the same thing. With regard to the utero-ovarian status of epilepsy, the vast majority of wonderful cures which have been reported by gynecologists are due to a lack of knowledge of epilepsy. Taking into consideration all things, a large proportion of the recoveries from epilepsy reported are simple evidence of lack of knowledge of the ordinary facts of the disease outside of the state of grand mal. While at Ward's Island and the Cook County institution I had chronic epileptics who had been "cured" by all possible procedures. At the Cook County institution, three patients were reported to have been cured by operation, but they were just as bad epileptics as they were before operation. Another case at the Cook County institution was a gentleman who had been "cured" of epilepsy, by trephining, by a French surgeon. You will find a report of the case in 1868 in *Champonniere's Journal de Medecone Practique*, but the man had epilepsy just as bad in 1884 and 1889 as he had in 1868.

INOCULATION TREATMENT.

DR. A. LAGORIO—My attention was called to the method of inoculation of nervous matter in the treatment of epilepsy about two years ago. It happened this way: A little boy 8 years old was brought to me at the Pasteur Institute in August, 1890, to be treated for a bite inflicted by a supposed rabid dog. The little patient received a full course of anti-hydrophobic fluid inoculations. Twenty-two injections were given in all, during a period of eighteen days. At the time of treatment the boy was rather anemic, poor in health, and had been treated for different ailments since childhood. I did not hear anything of the patient until about a year and a half afterward. To my astonishment I learned from the mother that her son had escaped hydrophobia, that the injections given not only improved his health, but had made him strong and vigorous, but that above all things they had cured him of epilepsy. This surprised me not a little, and I began to investigate the matter. That the boy had been truly suffering from epilepsy was assured me by the family physician, the late Dr. Thuemmber. The epileptic attacks would come on sometimes once a week, and then at other times once every two weeks, or once a month. There was no question about his having had epilepsy, and there is no doubt that from these several inoculations he recovered from the disease. What the causative factor was in curing the boy's epilepsy has always been to me a question—was it the substance which was injected? In my published report of April 12, 1892, I made a brief mention of this case—a copy of it was mailed to the leading medical journals of the country and also to several Pasteur institutes. It naturally aroused considerable interest, and many experimenters at once tried it; and although several of them reported cases, it pained me to notice that all them *forgot* to mention the source from which they received the inspiration. The object of my reporting the *first case* on record was not to claim any positive cure for epilepsy, but rather as an incentive to others to try the method and report.

Paul has injected the gray matter of the brain in many patients afflicted with nervous diseases and he has noticed that the vertebral pains and hyperesthesia rapidly disappear after a few hours and that in a locomotor ataxia the fulgurant pains cease, as also the neurasthenic headache and insomnia.

The experiments made by Brown-Séquard, Paul, Babes and others, and their claimed results led Crocq to believe that the effect of these nervous matter injections was due to the phosphorus contained in it, for according to Jolly there is found 2.928 per cent. of phosphorus in the white matter and 1.911 per cent. in the gray.

Crocq therefore instituted a number of experiments in the Hospital Molenbeck Sain-Jean (Bruxelles), with the injections of phosphate of sodum. Two cases of locomotor ataxia, one of chloro-anemia, and one of paralysis agitans were treated and the results were very encouraging indeed. But no beneficial effects can be attained whenever there are present profound lesions in the nerve substance; whenever the disease is essentially functional as in hysteria, chorea and epilepsy some good results can be had.

Colucci and Germano, of Naples, have given us a report of fourteen epileptics treated with the anti-hydrophobic emulsion. They find that this Pasteur fluid has an almost immediate action on the blood vessels. After three or four injections there is noticed a slowing of the pulse, and after a greater number of injections there is a marked irregularity and arythenia of all the cardio-vascular apparatus. If the injections are continued, a prostrating effect upon the body follows. The action of this Pasteur fluid is compared by them to such poisons as atropin, muscarin, veratrin, duboisin, etc. Their conclusion was that the Pasteur inoculations had rather increased the intensity of the epileptic attacks, and that such treatment, as a rule, failed in all of them.

I have treated about twenty epileptics with the nervous matter injections. I have abandoned long ago the rabic fluid, and only use the plain nerve matter emulsion. The effects are pronounced indeed. The epileptic seizure soon stops. Is it due to the moral impression or to the tonic effect produced upon the nerve centers? I do hold that such injections act as a most powerful neuro-tonic. Patients who are run down in health, haggard looking, anemic, nervously prostrated will soon improve in strength and health, and their appetite will revive. I will not enter upon the history of all cases, for the short time will not permit it, but will explain in a few words my method of treatment. I always begin with a course of nervine injections—one every day for twenty days, then one on alternate days for two weeks. I then administer bromid of sodium, occasionally, with belladonna and digitalis in small doses for some time to follow, and the results have always pleased me. I have had patients who came saturated with strong bromid mixtures but their attacks would still come. It was only after a course of nervous emulsion injection that they have showed signs of improvement.

This method which I have adopted, I believe is the best I can use in cases of epilepsy. By alternating the treatment, giving the injections first and then follow with a mild bromid medication, we can attain far better results than by administering the bromids alone.

Although I have written to all the patients, I have been unable to receive replies from all, especially from those living out of the city. Four patients living here have faithfully reported occasionally, and the results in these cases are remarkable. A young man began to have epileptic attacks four months after being infected with syphilis in 1890. He took a complete course of anti-syphilitic treatment for many months. He also took bromids *ad nauseam* for the relief of his epilepsy but nothing helped him. He was referred to me and finally submitted to nerve emulsion injections, and then bromid of sodium was given. It is a year and a half since he was treated, and he has had only two attacks during this time. When we consider that previously to the injections he was having two to three attacks a week, we must admit the result is highly promising.

In another case, almost identical with the one reported, and in which I applied the same treatment, nine months have passed without any attacks whatever.

A lady patient began to have epileptic attacks at the age of 6 years, following scarlet fever. These attacks occurred about twice a month. She had taken all sorts of treatment, but of no avail. When she called on me she had marked symptoms of bromidan from the large amount of the bromid salts taken. After the injections her general condition improved and has remained so for five months without a single attack.

Another case of nocturnal epilepsy also reported to me lately that the treatment had improved her wonderfully.

But, gentlemen, we must never be too sanguine, and must not rush into enthusiasm because of any fair or good results that we attain in our method of treatment. This method of nervine injections although in use a short time deserves attention and is worthy of trial. Time, only, will tell whether the results are permanent. I hope the farther we go, the more we will improve the method and the better probably will be our results.

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SATURDAY, NOVEMBER 17, 1894.

A PLEA FOR BREVITY IN MEDICAL WRITING.

"Therefore, since brevity is the *soul* of wit,
And tediousness, the limbs and outward flourishes,
I will be brief."—*Polonius* in "Hamlet."

Gracefulness and elegance is not given to all alike, nor can every one hope to express himself with perfect propriety and perspicuity; but in the use of the mother tongue all may be able to combine clearness of expression with brevity. This, indeed, is that simple style so much praised and so seldom seen.

A fact stated with simplicity gains in force, while if buried in tropes and figures or in mere words, it has no vigor. Too great attention to ornament destroys the dignity of an article, and is nearly fatal to its authority. One need not reject ornament, but in writing upon scientific subjects ornament must be held subordinate to truth and simplicity. These last are indeed cardinal virtues in the manuscript intended for the medical journals. Let the writer write what he thinks, express what he feels, and record what he observes. Observations of unusual cases are *always* of interest, no matter how they are reported, but even these reports lose none of their interest by being brief.

There is no need to use two words where one will answer the purpose of conveying to the mind of another some new fact, or the thoughts that the knowledge of that fact has evoked, and PROFESSOR EDMUND ANDREWS' article on this subject in this JOURNAL, August 18, 1894, was pointed and timely.

If we thus relegate ornament and redundancy to a subordinate place in medical writing, what shall we say of obscurity, and wrong use of words? While obscurity of meaning most frequently results from incomplete description, it very commonly arises from redundancy. Delicacy of expression and nicety of shading only come from long practice and study. They are never intuitive; but simplicity may be natural. The wrong use of words comes usually from a lack of study of rhetoric and want of attention to the rules of composition. No one need fear criticism if he will write what he thinks, as he thinks it. He can make the necessary corrections in style afterward. It is the thought—the concept—that is wanted by his fellows, and it is the interchange of conceptions that enlighten minds and raise the average of human knowledge. We can truthfully say that American medical writers are improving year by year, and we have had many American medical men whose writings can not be excelled, but it must be admitted that the average journal article is too long and tedious. The papers of the Surgical Section of the AMERICAN MEDICAL ASSOCIATION, read this year, are much above the average, because CHAIRMAN ROBERTS wisely placed a time limit on each writer when he solicited his paper.

There is an argument for brevity in medical writings, that should appeal even to those who write merely for the sake of writing, found in the well-known fact that wherever the writer of a very long and tiresome paper puts his "conclusions" at the end, in the form of a synopsis or summary, that part is not only read first, but is frequently the *only* part read by anybody except the writer and the proof reader. In such cases the "conclusions" frequently contain about all there is of value in the paper. Short papers are always read, and the great improvement in our medical literature in the past few years, as shown by the pages of the JOURNAL, is doubtless owing to the tendency of the time toward pithy articles. Let us hope that at future meetings the plan of CHAIRMAN ROBERTS may be the rule instead of the exception.

LIABILITY OF DRUGGIST TO PHYSICIAN.

The relation which exists between druggist and physician is one peculiar in its character. What are the legal rights and liabilities thereof, on the druggist's side, furnishes not only to him, but to the physician, an interesting and important subject for contemplation.

As a general proposition, the Supreme Court of Louisiana declares, in the case of Tarlton v. Lagarde (decided July, 1894, but just reported in the advance sheets of 16 *Southern Reporter* 180) it can not be conceded that the mere refusal of a druggist to fill prescriptions furnishes any occasion to hold him for damages to the physician who gives the prescription. In many cases the druggist may have the best reason for declining. As a chemist, he may perceive, or have cause to suspect, the physician erred in his prescription. Or the druggist may not have at

hand the ingredients, or he may distrust his ability to prepare the prescription, or other causes may disincline the druggist to undertake filling prescriptions.

From the evidence in this case it appears that a druggist declined to prepare two prescriptions. In one a patent medicine formed a component. He seems to have been averse to putting up prescriptions of which this patent medicine formed a part. In his own language as a witness, he was unwilling to take the responsibility of such a prescription, as he was not sure of the composition of the patent medicine.

There was testimony that it was not usual to make a patent medicine a component of a prescription, and there was testimony that it was not infrequent. This difference in the testimony of the physicians who testified, the court thought, deserved some consideration in connection with the unwillingness of the druggist to prepare the prescription,

With reference to the other prescription, which it was contended that the druggist should be made liable because of his refusal to fill, the answer was, that the prescription was not filled for want of the necessary ingredient and other causes. Under these circumstances, the court holds that the druggist was not liable in damages to the physician merely and only because the filling of his prescriptions on these occasions was declined by the druggist, for reasons not at all impugning the physician's capacity. Neither did it believe that the impression arising solely from the exercise of the druggist's right to decline to fill the prescriptions furnished any cause of action.

On the other hand, the court held that the druggist incurred liability by, without the slightest cause, indulging in public expressions tending to create the impression of the physician's incompetency. The slander attributed to the druggist was in the course of a discussion between himself and one of his fellow citizens, begun on the street, and continued in a barber shop. It first began with a request of the druggist for information of the gentleman addressed, formerly a Representative, whether the laws compelled a druggist to fill prescriptions presented to him. The information given on that subject did not suit him; but excited him, and led him to make observations offensive and unjust to the physician, at least in their tendency to affect those who were gathered by the animated and angry discussion, or to whom the observations might be repeated. The druggist, having exercised his privilege of declining to fill the prescriptions, should, for that very reason, have abstained from any comments calculated to convey impressions damaging the physician's character as a professional man. On the contrary, he engaged in a public discussion on the subject of the latter's prescriptions, in which he derided his diploma, and he further commented on one of his prescriptions. For this the Supreme Court thought that a judgment in favor of the doctor for $50 was too small, and increased it to $100.

EXPERIMENTATION ON CONDEMNED CRIMINALS.

Medical history informs us that upwards of nineteen hundred years ago, ERASISTRATUS and others made inquiry into certain anatomic and physiologic questions by means of vivisection. Some two thousand condemned prisoners were dissected alive in the course of those novel and instructive experiments, and now in the nineteenth century comes GOVERNOR FLOWER, of New York, who is said to have granted permission not to destroy, but to save the lives of persons electrocuted.

It appears that under the present law providing for execution by electricity, a clause was included which provides that in all such cases a *post-mortem* examination shall be immediately made. Certain electricians have asserted with much positiveness that it was the necropsy which destroyed the criminal and not the electric current. To settle this question, if authoritatively raised, it has been suggested to his Excellency the GOVERNOR, that proper experiments to determine whether or not these victims of the law could be resuscitated would not only be in the interest of science but in the interest of humanity, for if these persons could be brought to life, many a case of accidental electric stroke might be saved which, under present methods result fatally.

It is stated that the only apparent obstacle is the general theory that when a man is condemned to die by due process of law he must die in fact, and if by a new operation of the electric current, life was restored, the electrocution would have to be done again.

CASTRATION AS A REMEDY FOR ENLARGED PROSTATE.

Women have long had almost a monopoly of the sensation of being unsexed, thanks to the enterprise and valiant skill of the gynecologist; but now the general surgeon, despairing of having castration of men adopted by law as a punishment for crime, has recommended it as a remedy for disease. PROFESSOR RAMM, of Sweden, performed the operation twice in 1893, for enlarged prostate. HAYNES, of Los Angeles, three times; FREMONT SMITH, of St. Augustine, once; WHITE, of Philadelphia, once; C. MANSELL MOULLIN, of London, once. That well-known writer, in the *British Medical Journal* for November 3, advocates the operation in desperate cases, and states that it is invariably followed by disappearance of the enlarged prostate.

The crop of eunuchs, heretofore not very great in this country, may now be expected to increase with surprising rapidity, as our home talent is certainly

not less bold than that of foreign nations, and no matter how dull the practice may become, American surgeons' knives are quite sharp enough to produce any number of *sans testicules* that may be demanded by the fantastic fads of the times.

CORRESPONDENCE.

Was Death the Result of Cocain?

ALBION, MICH., Nov. 9, 1894.

To the Editor:—Oct. 26, 1894, I had occasion to remove a nasal polypus from the left nostril of a lady patient aged 60 years. Less than a year previous I had thoroughly cocainized the anterior and posterior nares upon two occasions, and each time removed a large number of mucoid growths, varying in size from a pea to a walnut, which completely filled the cavities and rendered respiration through the nares impossible. Upon neither of these occasions did she exhibit any toxic symptoms or evidence of shock or prostration. She was a patient of rather a nervous, delicate organization, but without any established history of organic disease. Upon the day mentioned she came to my office, complaining she was again experiencing difficulty in breathing freely through her nose. Examination revealed the presence of a mucous polypus in the left anterior nasal passage. A 4 per cent. solution of cocain was applied by means of a small pledget of absorbent cotton twisted around the thin end of an aluminum applicator, the entire mass being little if any thicker than an ordinary round match. The cocain solution by this means was lightly applied to the base of the growth; no packing of the nostril nor prolonged application was at any time made. After waiting two or three minutes, this same procedure was repeated and then immediately the mucoid growth, as large as a walnut, was removed by the forceps without any difficulty. The resulting hemorrhage was about the average attending these operations. The patient expressed herself as relieved and delighted at the luxury of again having free nasal passages. She vigorously walked to the washstand and thoroughly washed her face and hands, and remained in the waiting room of my office for perhaps ten minutes, occupying an ordinary upright chair. At the end of this time she expressed herself as feeling all right, got into her buggy at the door and was driven to the home of her daughter, a quarter of a mile distant, where she remained about three-quarters of an hour, making no complaints of illness, but expressed a desire to go to her own home, some two miles in the country. Herself and husband entered the buggy, and as he was the subject of senile cataract, as was her usual custom she did the driving. She continued, according to her husband's statement, to talk naturally and rationally, without any complaint of physical ailment. When within a mile of home she suddenly fell forward, gasped a few times and died.

No *post-mortem* was made, hence it is not known whether any organic cardiac lesion existed, but no diagnosis of such condition had been made during life, though during the past four years she had been attended by two physicians besides myself—(a year ago I attended her in an attack of la grippe). The time elapsing between the operation and her death was approximately one hour and a half. Can any connection with the result be traced to cocain or the operation?

HENRY DENNY THOMASON, M.D.

Case of Twins; One White, One Black.

WAYNE CO. HOUSE, ELOISE, MICH., Nov. 7, 1894.

To the Editor:—In reply to yours of November 2, I will say that twins were born, one African and one white child. The colored baby lived. The mother is a light-haired German woman, and I learn from her that the father was "a nigger born in slavery"—probably his father was some slave driver, at least he must have been a white man. "Breeding back," as the horseman says, seems to be applicable in this case.

Yours very truly,

F. B. HEISORDT, Resident Physician.

The First Statue to a Medical Man in the United States.

NEW YORK, Nov. 5, 1894.

To the Editor:—In your editorial of Nov. 3, 1894, you state that the Sims statue is the first public statue erected in the United States to the memory of a medical man. How about the statue of Dr. J. D. Crawford, which for years has stood in the rotunda of the Capitol at Washington, as the discoverer of ether in 1842?

It is a more graceful execution than that of Sims, who is represented with harsh angles without the smoothness and ease of the real Dr. Sims, as his presence graced the parlors, chambers and streets of New York.

If a medallion or monument can be called a statue, then Dr. Ephraim McDowell, of Kentucky, was thus honored.

I am glad to see your notice. The erection of this statue is an unique event and deserves fullest recognition. Few such statues adorn the capitals of Europe. That of Boerhaave, at Leyden, is a remarkably fine one. I am told there is one at Leipsic of another medical man. At Westminster, you see the marble bust of Sir J. Simpson, a fine portrait also; while at Newcastle-on-Tyne there is in one of the Established churches a magnificent full length portrait, in stained glass, occupying a whole large window, of a medical man of that city.

It is too bad that Dr. Rush's statue project languishes. We should prize the memory of such men. But now we have two statues of our professional worthies let us, as we look on or think of them, be inspired to do good work as they did. I thank God that such lives were lived for our encouragement.

Yours truly,

E. CUTTER, M.D.

BOOK NOTICES.

The Physician's Visiting List. (Lindsay and Blakiston's) for 1895.

This well-known and popular visiting list is, as usual, first in the field for the new year. It will be found quite up to date. A dose table has been prepared giving the dosage in the decimal system, also in the old British apothecaries-weights. Those wishing to use the decimal system who have not heretofore used it, will find the table of doses invaluable.

A Manual of the Practice of Medicine. Prepared especially for Students. By A. A. STEVENS, A.M., M.D. Third Edition, revised. Illustrated. Cl., pp. 501. Philadelphia: W. B. Saunders. Chicago: E. H. Colegrove & Co. Price, $2.50.

This is an excellent manual quite up to date in everything except dosage, clearly written, and in general quite satisfactory. The special pathology is necessarily brief, but it fairly represents the accepted teachings of the day.

Diagnosis, Differential Diagnosis and Treatment of Diseases of the Eye. By A. E. ADAMS, M.D. Cl., pp. 94. New York: G. P. Putnam's Sons. 1894.

Works on diagnosis without regard to size are always valuable, unless they contain positive errors. This little volume seems measurably free from them, and as it consists of tables arranged in parallel columns it will be found very convenient for ready reference.

The Pocket Anatomist. (Founded upon Gray). By C. HENRI LEONARD, A.M., M.D. One hundred and ninety-three illustrations. Eighteenth revised edition, containing Dissection Hints and Visceral Anatomy. Detroit: The Illustrated Medical Journal Co.

This useful pocket book, while intended mainly for students, will be found useful to general practitioners as well, for convenient and ready reference while on their rounds. The paper is poor but the low price at which the book is furnished probably precludes better material.

Essentials of Diseases of the Skin, including the Syphilodermata, arranged in the form of Questions and Answers. Prepared especially for Students of Medicine. By HENRY W. STELLWAGON, M.D., Ph.D. Third edition, revised and enlarged, with seventy-one letter press cuts and fifteen half-tone illustrations. Cl., pp 270. Philadelphia: W. B. Saunders. Chicago: E. H. Colegrove & Co. Price, $1.

An excellent book of its class, and one of the few question books that teach nothing to be unlearned afterward. The book is well printed and handsomely illustrated.

The Late Charles Warrington Earle.

A memorial volume to the late Charles Warrington Earle has recently been issued. It contains the memorial addresses of Rev. Frederick A. Noble, D.D., Bishop Samuel Fallows, D.D., William E. Quine, M.D., Henry T. Byford, M.D., and Mrs. George Sherwood. The frontispiece is an excellent steel engraving of Dr. Earle.

These addresses are so elevated in tone, and so touching in style, that it is well to have them preserved in permanent form not only on account of the many virtues and endearing qualities of the subject, but as well for their intrinsic merit.

The Pulse.

This is a handsomely illustrated annual, published by a committee of students of Rush Medical College, which publication the committee assure us will be continued from year to year. It contains a narrative of the college, the professors, ancient and modern, and of many alumni. The work is embellished by many half-tone illustrations, representing the building, the professors, the students, the clinics, and many humorous pictures. The letter press contains beside the heavy literature commemorating the many virtues of the college, specimens of class poetry, and facetiæ concerning various members of the class, which doubtless are best appreciated by "those who are in it."

The mechanical part of the book is excellent and, as a whole, it is highly creditable to those concerned in its production.

Essentials of Chemistry and Toxicology. For the Use of Students in Medicine. Twelfth Edition. (Wood's Pocket Manuals.) By R. A. WITTHAUS, A.M., M.D., Professor of Medical Chemistry and Toxicology in the University of Vermont; Member of the Chemical Societies of Paris and Berlin, etc. 32mo, 314 pages, muslin, red edge. Price, $1.

This little book is a handy volume that may be carried in the pocket. That its teachings are sound is evident from the fact that it has passed through twelve editions. In the present edition, "the part relating to the compounds of oxygen has been in great part re-written and re-arranged to keep pace with the advances in organic chemistry so far as is possible in a work of this character." The orthography adopted by the American Association for the Advancement of Science has been adopted, and it looks a little queer to read of "sulfur" and the like, but as we have already become accustomed to "fluorin," "chlorin," "bromin" and "iodin," the shock is not great. This intensely practical age has little time to waste in writing and printing superfluous letters from mere etymologic reasons.

NECROLOGY.

BENJAMIN MCCLUER, M.D., of Dubuque, Iowa, November 4. He was born in Franklinville, N. Y., in 1824 and was graduated from the medical department of Harvard in 1852. He began the practice of his profession in Holliston, Mass., where he resided for four years. In 1856 he moved to Dubuque engaging in general practice until 1861, when he was appointed surgeon of the Ninth Iowa Infantry. He served during the war with distinction and in 1865 was brevetted Lieutenant-Colonel. In 1866 he returned to Dubuque and resumed practice until 1893, when he retired to private life.——T. M. Ingraham, M.D., of Flatbush, N. Y., November 4, aged 72.——Frank Hartzell, M.D., of Churchtown, Pa., November 4, aged 50.——William A. Thom, M.D., Jr., of Norfolk, Va., November 1. He was an ex-President of the Norfolk Medical Society, and was at the time of his death President of the Society of the Alumni of the University of Virginia. He was for a number of years quarantine officer of Norfolk.——Rudolph B. Shultz, M.D., of Reading, Pa., November 3, aged 34 years. He was graduated from the Jefferson Medical College of Philadelphia and was for several years physician at the County Hospital.——E. B. Forsee, M.D., of St. Joseph, Mo., aged 50 years.——J. H. Davis, M.D., of Waterloo Wis., October 28. J. R. Coleman, M.D., of Princeton, Ill., November 4, aged 60 years.——C. H. Lovelace, of Dukedom, Tenn., November 7, aged 40 years. He was for many years a member of the ASSOCIATION.——Charles T. Chase, M.D., of Brooklyn, November 8, aged 63 years.——E. B. Elrod, M.D., of Flora, Ill. November 10.——J. S. Geigley, of Canton, Ill., November 2, aged 36.

PUBLIC HEALTH.

Syphilis in Greenland.—Nelms comes to the following conclusions (*Rev. Int. de Bibl. Med.*), on the subject of syphilis in Greenland: 1, a few cases of syphilis occurred in Greenland during the decade 1870–1880; 2, at present there are no cases in that country; 3, the Greenlanders manifest a relative immunity to the disease.

Brewers' Grains and Cow's Milk.—One of the most important problems in the hygiene of infancy is that of the quality of cow's milk, which forms nearly the entire food of many children, and we know that many deaths from athrepsia are due to milk of poor quality. It is generally believed that brewers' grains fed to cows make the milk more abundant but "watery," and that dairymen feed them as an indirect way of watering the milk. In order to elucidate this question M. Garnier undertook a series of researches, the results of which he has communicated to *Les Annales d'Hygiene Publique*. To his mind his investigations prove that grains when mixed with sufficient dry forage to keep animals in good condition may modify or diminish the proportion of fats, but have no marked influence on the quantity of water in the milk.

Protection Against Noxious Animals and Insects.—A new section of the Pasteur Institute, devoted to the experimental study of means of defense against injurious animals and especially insects, is to be founded, according to the *Gazette Médicale de l'Algerie*. It will be under the management of Professor Metchnikoff. This scientist was the first to utilize the parasitism of certain mushrooms for the destruction of insects ravaging them—the *Anisoplia austiaca* and *Celonus punctiventris* by *Isaria destructor*. The station will have for its mission: 1, to collect and maintain cultures of all the pathogenic microbes of insects and injurious animals; 2, to study the conditions of development of these microbes in animals and artificial media; 3, to direct experiments in the field; 4, to supervise and control their application in practice. The section will publish a special bulletin and will have the advice of a number of eminent savants—MM. Giard, Laboulbene, Grandeau, Künckel d' Herculais and others.

Sewer Discharges of Seaport Towns.—M. Cassedebat, a French army surgeon who has made a special study of potable waters, has been investigating the action of sea-water upon microbes with a view of determining whether the discharge of sewage into the harbors of seaports has any injurious

effect upon the public health. He collected samples of water in the port of Oran, Algeria, at varying distances from the mouths of the sewers, and has discovered that the liquid was so charged with germs that it was not possible to count them until a twentieth dilution was made. The bacteria were most numerous where the water was most tranquil and allowed the germs to be brought to the surface and distributed along the shore, whence they might readily be disseminated by the winds over the city. Nevertheless, sea-water is destructive to microbic life. M. Cassedebat, using tubes of sterilized sea-water, found pus microbes died in from twenty-two to twenty-four days; the pneumococcus in from thirty-five to forty days; the anthrax bacillus in from twenty-one to twenty-four days; and the microbe of typhoid fever after forty-eight hours; the rapid death of the typhoid bacillus is of most interest.

A Health Department Appreciated.—It is so seldom that the lay press gives just recognition to the public health services, that the JOURNAL hastens to reproduce the following from the Toronto (Ont.) *Star* of a recent date: "One of the best managed departments in connection with our civic affairs, and the one which gives the best returns for the money expended, is the Health Department." The appropriations and expenditures for sanitary purposes during 1894 are then given in some detail, and the *Star* adds: "For this expenditure the general health of the city is better than ever before. Besides this expenditure, there is a large amount appropriated for building and maintenance of the isolation hospital, but the citizens have the satisfaction of knowing that the city is being so well fortified against epidemic diseases that the danger of a serious outbreak is reduced to a minimum." It may also be noted in this connection that the health departments of some of our large cities—where political corruption is rife and municipal pay-rolls have been overloaded for election purposes—have been recently singled out for honorable mention, because of reduced rather than increased expenditures.

Sanitary and Medical Legislation in New York.—The amendments to the State constitution adopted at the late election in New York make feasible some needed legislative changes in the interest of State medicine in that commonwealth. One amendment strikes out the word "coroners" from the old instrument so that it is now reasonably certain that the forthcoming General Assembly will enact legislation analogous to the Medical Examiner laws of Massachusetts, Connecticut and New Jersey with regard to the inquisition into the causes of sudden or violent deaths and into cases in which there is reason to suspect that death was due to other than natural causes. This amendment has been urged by the New York Academy of Medicine on grounds which may be summed up substantially in the statement that diverse and incongruous functions, requiring an almost impossible combination of expert knowledge, are embodied in the old office of coroner; and that, as a result, society is not adequately protected—its lower classes especially, against the negligence of employers and corporations and all classes in general against crime, by the coroner system. Another amendment abolishes the limitation to $5,000 of the amount of damages recoverable in case of death by accident; and still another forbids the sale of lands and the cutting of timber in the State forest preserves—a prohibition in the interest of the conservation of the water supplies and the preservation of health resorts.

Epidemic Contagious Diseases.—Smallpox "storm centers" continue at Milwaukee and Chicago, and there is some increase of danger points in other States—New York, New Jersey, Pennsylvania, Ohio, Indiana, Michigan and Iowa. Under date of November 5, Dr. Wingate, Secretary of the Wisconsin State Board of Health, reported 139 cases of smallpox in Milwaukee and 37 cases in seven localities in Milwaukee, Waukesha, Walworth and Manitowoc Counties; during the week ending November 13 there had been reported thirty cases with seven deaths in five localities in four counties, and twenty-three new cases with nine deaths in Milwaukee; Dr. Wingate adds: "This is the smallest number of cases reported from Milwaukee in any one week since August 4; there are now on hand in the city 107 cases (41 in hospital and 66 at home) a decrease of 32 as compared with the week previous, and of 44 as compared with two weeks ago;" since the outbreak in January last the disease has appeared in forty-seven different localities in Wisconsin, and now exists in Milwaukee, Wauwatosa, South Milwaukee, Greenfield, Franklin, (all in Milwaukee County), Beaver Dam (Dodge County), Muskego (Waukesha County), Spring Prairie (Walworth County) and Two Rivers (Manitowoc County). Except four cases at Sandwich, DeKalb County, on the 14th inst, there is no smallpox reported in Illinois outside of Chicago, where there were on the 13th inst., fifty-seven cases—all in hospital. A dispatch of the 13th says that of the forty-three cases now known to exist in New York City, thirty-two are said to be traceable to the family of a grocer in which there was an unreported case of smallpox some time ago, during the existence of which the shop was kept open, and customers contracted the disease. Whether as a result of the amount of attention given by the public press to the new antitoxin treatment of diphtheria or because the disease is really more prevalent and more virulent than usual, the fact remains that the JOURNAL is in receipt of an unusually large number of reports of the prevalence of diphtheria; its incidence seems to be general north of the Ohio River, and in many localities whole families are reported to have been swept off, panic created, schools closed and business suspended. Other dangerous contagious diseases in this country—typhoid fever, scarlatina, etc.—present no features worthy of note. A recent Berlin despatch reports 170 soldiers of one regiment, at Glogau in Prussian Silesia, ill with symptoms of Asiatic cholera and the barracks closed in consequence. Professor Flügge has been sent to determine bacteriologically the exact nature of the disease; several cases of choleraic nature have also been reported at Jaetschau in the same province, but the season is too far advanced to warrant alarm on account of these reports.

Activity Among Health Authorities.—In addition to the actions of the various State Boards of Health and municipal health officers heretofore noted in the JOURNAL from time to time, there is manifest at the present time an unusual activity among these bodies which is attracting general interest. As a result of the efforts of the Maryland State Board of Health, a Sanitary League of the health authorities of that State has been organized with Dr. T. W. Simmons, of Washington County, as President; Dr. James F. McShane of Baltimore, Vice-President, and Dr. James A. Steuart, Secretary of the State Board of Health, as Secretary; the League purposes to devote its energies to securing needed sanitary legislation. From Ohio, Dr. C. O. Probst, Secretary of the Ohio State Board of Health, announces the tenth annual meeting of the National Conference of State Boards of Health to be held in Washington, D. C., December 12–15, prox.; Dr. Probst, President of the Conference, will open the discussion on one of the questions propounded by the Michigan State Board of Health. "Is it possible to have united action throughout the country on the prevention and restriction of consumption?" the Ohio Board will offer the following question for discussion by the Conference: "What measures should be taken by State Boards of Health to prevent the conveyance of smallpox contagion by tramps?" and Dr. J. W. Scott, of the Illinois Board, will read a paper on the State control of the production of vaccine virus. The Michigan State Board has prepared a bill, which it will urge at the next session of the Legislature, prohibiting, under severe penalties, the sale of milk from cows affected with tuberculosis; and another, requiring school teachers and professional nurses to possess certificates from reputable physicians, that they are free from tuberculous or other disease communicable to pupils or patients. The Illinois Auxiliary Sanitary Association held a meeting during the week at the State capital, at which Dr. C. N. Metcalf, Secretary of the Indiana State Board, read a paper on the "Best Methods of Sanitary Organization;" Dr. A. R. Reynolds, Health Commissioner of Chicago, on "Needed Public Health Legislation;" Dr. Sarah Hackett Stevenson, of the Illinois State Board, on "School Hygiene;" Dr. Henry B. Baker, Secretary of the Michigan State Board, on "Vital Statistics and the Best Methods for their Collection;" Dr. Adolph Gehrman, Director of the Chicago Municipal Laboratory, on the "Bacteriologic Diagnosis of Diphtheria;" Dr. C. O. Probst, of the Ohio State Board, on the "Restriction and Prevention of the Communicable Diseases."

Among the topics of "Needed Sanitary Legislation," Dr.

Reynolds urges the extension of the burial-permit ordinance to every locality and the adoption of a uniform classification and nomenclature of the causes of death, as essential to a more perfect registration of deaths and their causes—the shifting of the duty of reporting births from the physician or midwife to the parent or householder on whose premises the birth occurs, in order to secure a more perfect registry of births—the compensation of physicians for the notification of contagious diseases, or their relief from this obligation and its imposition upon the householder—the vesting of the control of county charities in a continuing, non-political board of trustees—and the creation of the office of medical examiner to relieve the unqualified political coroner of the duty of determining "the cause of death." In Iowa, during a two-day session, the State Board of Health took action on the subjects of tuberculosis, smallpox, diphtheria, "walking" typhoid, trichinosis and other diseases; tuberculosis was declared to be communicable and as such a quarantinable disease; Professor Bay, the bacteriologist of the Board, in submitting his report of work done in the bacteriologic laboratory, stated that he had, "simultaneously with Dr. Klein in Germany, discovered and identified an unmistakable rod bacillus, constantly found in smallpox and vaccine virus," and had named it the *Dispora iowaeusis*; "walking cases" of typhoid fever are declared to be as capable of spreading the infection as the bed-fast, and are, consequently, to be subject to the same rules of surveillance, disinfection, etc.; typhoid fever, roseola, chickenpox, mumps and whooping-cough are recommended to be stricken from the list of quarantinable diseases. In Missouri a Sanitary Commission, appointed by Dr. George B. Homan, Health Commissioner of St. Louis, has made an elaborate report on dairy inspection and the regulations necessary to secure a pure milk supply, and the report has been adopted as the basis of legislation to prevent the sale of milk from diseased cows, and from cows within one month before or one week after calving, of milk which coagulates upon boiling, and of milk handled by persons afflicted with or exposed to a communicable disease. From all of which, and much more of a similar character not here noted, it might be inferred that the occupation of the physician will soon be like Othello's.

Statistics of Serum Therapy in Diphtheria.—The following figures, compiled from a lengthy article by Dr. E. Roux, in a recent issue of *Les Nouveaux Remèdes*, form the numerical basis on which rest the claims of serotherapy in diphtheria—the bracketed figures being the JOURNAL corrections of a few minor errors of computation in the original article which do not, however, vitiate the general results: Serum treatment was begun in the Hospital for Sick Children in Paris, Feb. 1, 1894, and continued to July 24; all sick children found in the diphtheria pavilion from day to day were treated with the serum without regard to their condition and without other change in the treatment usually employed, so that the gross results of the months of serum treatment may be compared with those of similar preceding periods; the statistics of the diphtheria service for previous years were furnished by the superintendent and the director of the hospital and supply all the elements necessary for comparison; in addition, the statistics of the Trousseau Hospital for Children, which also has a diphtheria pavilion and in which the serum was not used, furnish another term of comparisons. During the years 1890–1893 inclusive, 3,971 children were admitted to the diphtheria pavilion of the Paris Hospital for Sick Children and of these 2,029 died; the yearly percentages of mortality were: 1890, 55.88; 1891, 52.45; 1892, 47.64; 1893, 48.47—a mean of [51.11] per centum. During the period of serum treatment 448 children were admitted and of these 109 died, or [24.33] per cent. All the conditions being the same, except the addition of the serum to the usual treatment, the difference between these percentages measures the benefits of the antitoxin treatment. During precisely the same period in 1894 there were 520 children admitted to the diphtheria pavilion of the Trousseau, and of these 316 died—a mortality of [60.7] per cent. Obviously, the disease was not of a benign type during this period. Differentiating between the anginas and the tracheotomized croups—the anginas gave a mortality of 33.94 per cent. in 1890, 1891, 1892 and 1893; during the serum treatment period of 1894 the mortality was 12 per cent., but in the Trousseau, where the serum was not used, the mortality was 32 per cent. during the same period. The tracheotomized croups gave a mean mortality of 73.19 per cent. in 1892-93; during the serum period the mortality was 49 per cent., but during the same period in the Trousseau the mortality was 86 per cent. Dealing only with the cases bacteriologically demonstrated to be true diphtheria—300 in number with 78 deaths,—the mortality was 26 per cent., as against the 50 per cent. mortality of the ante-serum period demonstrated by the researches of MM. Roux and Yersin and MM. Martin and Chaillou. The following table presents an analysis of 169 diphtheritic anginas treated by the serum, with 21 deaths—a mortality of 12.4 per cent.:

	Cases.	Deaths.	Mortality, per cent.
Pure diphtheritic anginas	120	9	9.5
Deduct 7 in hospital less than twenty-four hours	113	2	1.7
Anginas with associations	49	12	24.2
Deduct 4 in hospital less than twenty-four hours	45	8	17.7
Association with the small coccus	9	0	
Association with staphylococci	5	0	
Association with streptococci	35	12	34.2
Deduct 4 in hospital less than twenty-four hours	31	8	25.8

There were 56 deaths in 121 croups operated on—a gross mortality of 46.2 per cent.: deduct 14 who died within 24 hours after entering, leaves 107 operations with 42 deaths—a net mortality of 39.2 per cent.

	Cases.	Deaths.	Mortality, per cent.
Pure diphtheritic croups	49	15	30.9
Deduct 4 in hospital less than twenty-four hours	45	11	21.4
Diphtheritic croups with the small coccus	9	1	[11.1]
Diphtheritic croups with staphylococcus	11	7	[63.3]
Deduct 3 in hospital less than twenty-four hours	8	4	50.
Diphtheritic croups with streptococcus	52	33	[63.4]
Deduct 7 in hospital less than twenty-four hours	47	26	57.7

[The deductions in the two foregoing tables are of moribund cases dying in less than twenty-four hours after admission.]

The most important German statistics with which to compare the foregoing are those of Ehrlich, Kossel and Wasserman, who report 220 cases, 168 recoveries, 52 deaths—mortality [30.9] per cent.; among these were 67 tracheotomies with 30 deaths—mortality [44.7] per cent.; in another article Ehrlich and Kossel report 55 new cases—26 tracheotomized with only 8 deaths; they do not state, however, that a bacteriologic examination was made in all cases.

English Expenditures on behalf of Public Health.—The burden of many addresses before sanitary associations and public health meetings in this country has been the impossibility of obtaining appropriations of public money for sanitary purposes. Money is appropriated freely by Congress for the general good in almost every line save in that for the protection of the people against preventable diseases; and the most liberal of our State Legislatures and municipal authorities begin to tighten the purse strings when the needs of boards of health become the subject of consideration. Is it too much to say that, generally, in matters of sanitary progress we are following in the ruts of British sanitation, and about twenty years behind, confined to this rearward position by the backwardness of legislators to give to sanitary propositions the consideration which they should command? When will a President of the American Public Health Association be able in his annual address to "point with pride" to the vast sums expended by his government for the benefit of the public health, as was done by the President of the British Sanitary Institute at the recent meeting in Liverpool? Sir Francis S. Powell, M.P., who delivered the address, restricted himself within the boundaries of public health as affected, in England and Wales, by administration and by law. It was impossible to survey the field without a sense of satisfaction, almost of triumph. The difficulties hindering progress were diminishing both in area and in gravity. Improvement in public health had justified both the cost involved and the labor expended. The Local Government Board had, during the last twenty years, sanctioned a capital expenditure, chiefly for sanitary purposes, of £53,021,334 in urban and of £3,923,270 in rural districts, while, during the same period, local Acts had authorized a further expenditure of £67,335,966; and vital statistics have abundantly proved the wisdom of these expenditures.

During these years a great deal has been accomplished in the United States; but it has been the work of individuals,

mostly members of boards of health and of the Public Health Association, operating within their jurisdictions, removing harmful influences and urging protective measures, renewing their efforts after every defeat with fresh energy, undiminished vigor and full confidence that they will ultimately be successful. To such solid and efficient federal and local support as is given to the health authorities of England, our own vital statistics would respond freely, for few of our urban or rural districts have mortality rates so low as to resist the reducing action of sanitary measures.

SOCIETY NEWS.

Mitchell District Medical Society.—The forty-sixth semi-annual meeting of the Mitchell District Medical Society will be held at Mitchell, Ind., Dec. 27 and 28, 1894. The program is an excellent one and a large attendance is expected.

The Women's Medical Club of Chicago gave their first banquet Wednesday evening, November 14. Gertrude G. Wellington, M.D., was Chairman of the Committee of Arrangements.

The Medical Society of Virginia held its annual meeting in Richmond, October 24. The following officers were elected: President, Robert J. Preston; First Vice-President, Hugh Nelson; Second Vice-President, C. M. Stegleman; Third Vice-President, John Grammer; Recording Secretary, Landon B. Edwards; Corresponding Secretary, J. F. Winn, of Richmond; Treasurer, R. T. Stile.

The American Academy of Railway Surgeons completed its organization at its meeting held in Chicago November 9 and 10, and elected the following officers: President, C. K. Cole, Helena, Mont.; First Vice-President, C. M. Daniels, Buffalo, N. Y.; Second Vice-President, W. H. Elliott, Savannah, Ga.; Secretary, Webb J. Kelly, Galion, Ohio; Treasurer, C. B. Kibley, Corry, Pa.; Editor, R. Harvey Reed, Columbus, Ohio. The next meeting will be held in Chicago, Sept. 12, 13 and 14, 1895.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION has by formal vote been selected as the one in which the Transactions will be published. The constitution as adopted limits the membership to 200.

Middle Tennessee Medical Association.—The first regular meeting of the Middle Tennessee Medical Association will be held Nov. 20 and 21, 1894, in the Senate Chamber of the Capitol at Nashville. The Association will be called to order by the President, Dr. J. B. Cowan, Tullahoma, at 12 o'clock. All physicians are most cordially invited to be present.

On August 21 last, a number of the leading physicians of Middle Tennessee, in response to the call of a committee met in Nashville and effected the temporary organization of this Association. Temporary officers were elected and committees appointed, and it was decided that the permanent organization should be formed at the next meeting, the time of which was set for November 13 and 14, but the committees thought best to change the date to November 20 and 21.

It was determined at the preliminary organization, that papers and discussions should be arranged for the forthcoming meeting, and, in carrying out this idea, the Essay Committee has secured a most excellent program. The object of the Association is the advancement of medical knowledge and the promotion of a fraternal feeling in the profession, and it is intended that it shall work in unison with, and not antagonistic to, our State Society.

The Nicholson Hotel will offer reduced rates to its guests.

Reduced fare will be given by the railroads, but the manner in which it is given differs in the two roads. Those who intend traveling over the Nashville, Chattanooga & St. Louis Railroad must buy the round trip excursion ticket which costs one and one-third of the regular fare, and will be good until November 22. The Louisville & Nashville Road gives the reduction upon the certificate plan. Certificates of purchase of tickets should be secured from the ticket agent when starting, which certificates, when countersigned by the Secretary, will enable the holder thereof to secure return ticket at one-third the regular fare.

The following is the program: The Climacteric: Its Phenomena and Dangers, by J. S. Nowlin, Shelbyville. Discussed by A. H. Abernathy, Erin; Perineal Urethrotomy: Its Indications and Technique, by James W. Handley, Nashville. Discussed by M. Woodson, Gallatin; Etiology and Pathology of Vascular Diseases of the Brain, by J. R. Buist, Nashville. Discussed by W. L. Nichol, Nashville; Differential Diagnosis and Treatment of Vascular Diseases of the Brain, by John A. Witherspoon, Nashville. Discussed by John S. Cain, Nashville; The Use and Abuse of Antipyretics, by J. W. Waters, Nashville. Discussed by W. C. Bilbro, Murfreesboro; The Treatment of Pleural Effusions, by J. B. Murfree, Murfreesboro. Discussed by S. B. Fowler, Gainesboro; Placenta Previa, by F. J. Runyan, Clarksville. Discussed by J. Bunyan Stephens, Nashville; The Methods of Conducting Gynecologic Examinations, by W. K. Sheddan, Williamsport. Discussed by W. D. Haggard, Nashville; The Prognostic Value of Examinations, Abdominal, Vaginal and Pelvic, Before Labor, by W. A. H. Coop, Lawrenceburg. Discussed by Thomas Menees, Nashville; The Prevention and Treatment of Puerperal Mastitis, by A. J. Swaney, Gallatin. Discussed by B. B. Gracey, Smyrna; A Clinical Report on Naso-Pharyngeal Reflexes, by L. B. Graddy, Nashville. Discussed by George H. Price, Nashville; Differential Diagnosis and Treatment of Conjunctivitis and Inflammations of the Anterior Portions of Uveal Tract, by G. W. Hale, Nashville. Discussed by T. Hilliard Wood, Nashville; Is Appendicitis Essentially a Surgical Affection? by Robert Pillow, Columbia. Discussed by John Wickham, Palmyra; The Treatment of Severe Typhoid Fever, by T. H. Marable, Clarksville. Discussed by G. W. Moody, Shelbyville; Fractures of the Femur, by Paul F. Eve, Nashville. Discussed by S. C. Bridgewater, Dixon Springs; The Radical Cure of Inguinal Hernia, by Charles S. Briggs, Nashville. Discussed by Charles S. Brower, Nashville; The Significance of the Uric Acid Diathesis, by J. B. Cowan, Tullahoma. Discussed by William Murrell, Winchester; A Study of Acute and Chronic Nephritis, by Hazle Padgett, Columbia. Discussed by N. D. Richardson, Jr., Nashville; Facial Blemishes, by C. R. Atchison, Nashville. Discussed by Cranston Nash, Nashville.

HUGH R. MILLER, M.D., Secretary.

MISCELLANY.

The Hard Times.—The funny man of the *Washington Star* says that the times are so hard that his doctor told him that even his blood was impoverished.

Change of Address.—Dr. P. O. Hooper has returned from California, to Little Rock, Ark., and has resumed practice there. Dr. Albert M. Jones to Redlands, Cal., from Eaton, Ohio.

Intubation in Sub-Glottidean Edema.—At the meeting of the Imperio-Royal Society of Physicians held in Vienna October 26, M. Chiari presented a woman 46 years old who had been attacked by stricture of the larynx due to a catarrhal inflammation of the sub-glottidean region. The dyspnea had become very intense, and M. Chiari introduced an O'Dwyer tube No. 4, but the tube was expelled by the patient in a few hours. He then introduced a No. 6 tube which remained in place almost to the next day, and it had a most favorable action on the edema and the dyspnea.—*Semaine Medicale*, November 3.

The Water-Supply at Jerusalem.—The Turkish Ministry of Public Works has determined upon the reconstruction of the ancient water conduits of Jerusalem, dating from the age of King Solomon. By this means it would be possible to convey 2,500 cubic meters of water daily to the Holy City. Of this it is proposed to give 1,000 meters away free of charge to the poor of Jerusalem, the distribution to take place at the Mosque of Omar, the Holy Sepulchre, and other places frequented by pilgrims. The new conduits are to be joined to the ancient aqueducts of Arob, and are to be carried through a tunnel 3,570 meters in length. The total outlay in connection with these works is estimated at 2,000,000 francs.—*The Sanitarian* from *London Standard*.

A Sketch of Dr. Roux.—Dr. Roux has been the assistant of Pasteur for fifteen years. Pasteur himself, who has pushed so far all researches relating to microbes and vaccinating against them, is only a chemist. When he came to study human diseases with his peculiar methods it was necessary that he should have some trained physician to assist him. He applied to Vulpian, who was then at the height of his fame and at the head of the faculty of medicine in Paris. He chose the young Dr. Roux, who was but an unknown student.

Fortunately the student was of the stamp of Pasteur himself. He is capable of working twelve or thirteen hours a day week after week, and he is as curious to know as he is keen in understanding the results of his observation. He has had a great deal to do with all of Pasteur's discoveries, from the vaccine against carbuncles to that against hydrophobia. The discovery of the special poison of the microbe of diphtheria and croup was made by a German professor of Berlin, but he was unable to reduce it to a method of practical vaccination. It is this which has occupied Dr. Roux for the last two years. The 2,500 doctors assembled together in Buda-Pesth from all parts of the world seemed to believe that he has at least been partially successful. This is already a great deal in the disease which has been called the world over the terror of mothers.

In personal appearance Dr. Roux resembles an English Protestant minister more than a French doctor. He is tall, thin, with blond hair, and a small head from which keen eyes look piercingly. He is always dressed with the utmost soberness, wearing no ornament but the rosette of officer of the Legion of Honor, which was given him at the jubilee of Pasteur himself. He looks on strangers with distrust, and the mention that one is a journalist is sufficient for him to wrap himself in icy silence. Some of the Paris journalists have even had a harsher experience at his hands. They have at least learned that the power of his tongue is as great as that of his knives.

He belongs to the vigorous peasant race of Auvergne, where he was the schoolmate of M. Dupuy, the present Prime Minister of France. The latter is full-faced and jovial. There could be no greater contrast between two men, but they are always great friends. Dr. Roux has never married. He lives with his widowed sister, to whose children he gives a parent's attention. Wonders are also told of his charity. It is certain he never tells of it himself—nor apparently of much else that comes his way until it is ready to be of some use.

All last winter his daily visits to the children's hospitals were enough to exhaust the strength of one man. But he was often seen in the remote quarters of Paris at the bedside of little ones down with the terrible disease. Sometimes he has passed the whole night watching them. When the poor parents in the morning asked what they could give him the famous physician darted out of the door and disappeared as if afraid of their thanks. This disinterestedness, which he carries to an extraordinary degree, is known to all his associates of the Institute. He is now the head of the service, but as the Institute is always in want of funds he does not even draw the small salary which is allotted him. His friends say that he belongs to another age, that he knows nothing of money and cares less, and that he has given up his whole existence to serve science and humanity. Among his other good qualities is an absolute devotedness to the person of Pasteur, whom he rightly considers his master. He is one of the best bicyclists in Paris and arrives each morning at the Institute on his wheel.—*Boston Transcript.*

Illinois State Board of Charities.—The following circular has been issued:

CHICAGO, Oct. 22, 1894.

The State of Illinois has about 7,000 insane in public and charitable institutions. Five thousand are cared for in State hospitals; the remaining 2,000 are in hospitals and wards of poor-houses of the counties.

Governor Altgeld decided in 1892 that the existing State hospitals should not be enlarged, but that a new hospital should be built. In order to avail ourselves of the most advanced thought and of recent experience, we beg to address to you the following circular containing a number of questions to which you will be kind enough to give us an answer from your personal experience:

Would you prefer care of the incurable in county asylums and poor-houses at the expense of the counties, to care at the expense of the State, either with more State supervision or with concentration of those patients in State hospitals?

Does the difference in the needs between curable and incurable patients justify the construction of a less expensive hospital for the chronic incurable?

What percentage of patients do you judge fit for work on a farm? (After the plan of Alt-Scherbitz in Germany.) First, male; second, female.

Is a separate institution for epileptics desirable, and to what extent will it relieve the insane hospitals?

Is the Scotch boarding-out system feasible in this country?

Which is, to your knowledge, the best plan for a hospital of a thousand patients?

1. For largely acute cases. (What percentage of those cases would require special medical care and nursing in real hospital wards and watch-wards, after the arrangement of Dr. Scholtz in Bremen, compare *allg. zeitschr f. Psychiatrie*, Vol. L.)

2. Hospital for chronic patients.

Very truly yours, BOERNE BETTMAN, M. D.,
President Illinois State Board of Charities.

Louisville Notes.

FALLS CITY MEDICAL SOCIETY.—At the regular meeting November 8, the paper of the evening was read by Dr. W. R. Blue, upon "Vegetable Parasitic Diseases of the Skin." Of the different varieties mentioned he said that he had never seen a case of *tænia tonsurans* in an adult. He advised quarantine. Of the thirty-four cases reported the average duration of the treatment with the remedies below was five months. His success was in part due to the regularity and persistence of the treatment. The following was recommended as a routine treatment: First soak the scalp and rub well the affected parts with a 5 per cent. carbolic ointment; shampoo with tr. green soap; paint on the spots a solution of bichlorid of mercury dissolved in tr. benzoin co. of the proportions of 2 or 3 grains to the ounce. Over this is painted flexible collodion. This dressing remains intact for four or five days; it should then be removed and the bichlorid solution re-applied as before. Dr. Butler reported the case of a man brought into the City Hospital with delirium tremens. He was very violent and was put into the cell under the care of an attendant. His hands were confined in a jacket, but while the attendant was gone from the room for something he succeeded in freeing them and when next seen had pulled his tongue out with both hands and had bitten it in two, the severed piece several hours afterward measuring two and three-fourths inches. He had a great deal of hemorrhage which was with difficulty stopped by the application of subsulphate of iron. His pulse grew rapidly weaker and he died a few hours afterward. The interesting part of the case is the fact that the patient could articulate plainly even after his tongue was severed.

THE CITY HOSPITAL.—Several interesting cases have been admitted to this institution during the past month. Three are of particular interest:

Case 1.—A man walked into the hospital saying that he had been cut in a fight. An examination showed the following: A cut in the cervical region of the left side which extended down to the vertebra and cut off a piece of the transverse process, severing one of the arteries; considerable hemorrhage took place from this wound. In the right mid-axillary line, about in the lumbar region, there was a superficial cut four inches long, extending through the skin and fascia. On the left side there was a descending cut which severed the eighth and ninth ribs, cut through the diaphragm into the abdominal cavity, and made a large cut in the spleen. Shortly after, a laparotomy was done, the incision being made in the median line, but no wound of the gut was found. The omentum protruding from the wound in the side was replaced, the cavity flushed, the wound in the spleen packed, a drainage tube inserted and the median wound closed. The patient went on the table in a fairly good condition and remained so until the chloroform was stopped when he began to grow weaker, his pulse rapid and he died thirteen hours after the cut was received.

Case 2.—A penetrating gunshot wound of the abdomen. The wound of entrance was between the seventh and eighth ribs in the post-axillary line. Exploration with the finger showed it to range downward and inward to the liver. Abdominal section was done and the cavity found full of blood, but no wound of the gut was found. The cavity was washed

out and the wound packed. The patient did not rally and died three days later.

Case 3.—Gunshot wound of the abdomen. Ball entered in the left iliac region ranging upward and penetrating the cavity. A laparotomy was done and much blood found in the cavity with a wound of the stomach below the omental attachment near the cardiac end; two penetrating wounds of the transverse colon were also found. The wounds were closed, the cavity flushed and the abdominal incision closed with drainage. There was no shock present but the patient died twenty-four hours afterward.

The report of the hospital for the month past shows an average number of patients in the hospital as 127 per day. There were twenty-one deaths. The average cost of the entire force, including patients, was 80 cents; the average cost per day for the patients' diet was 17½ cents; the average cost of each patient was 50 cents per day.

Health Report.—The Health Officer's tabulated report for the week past shows a total of fifty-three deaths. This list includes nine deaths from phthisis, four from pneumonia, and three each from organic disease of the heart, Bright's disease and cerebral meningitis. Three of the deaths occurred at the City Hospital. There were four still births. The Health Officer has had a most excellent ordinance passed for the regulation of the school children as to successful vaccination, by which a complete record of all the children in the city is kept. Details of this will be written in the next letter from your correspondent here.

Washington Notes.

Medical Society of the District.—At the Medical Society November 5, Dr. F. B. Bishop read a very instructive essay on electric batteries and some of their distinctive features in the treatment of disease. Dr. Acker presented a patient suffering with scleroderma. Dr. E. F. King presented a specimen of aneurism of the aorta. Dr. A. A. Snyder exhibited some fluid aspirated from a lumbar abscess supposed to be a pyonephrosis.

The Woman's Clinic.—The annual meeting was held on the 6th inst. The report of the work for the year was received from the medical staff, and shows a steady increase in the attendance. This hospital is conducted entirely by women physicians and supported by voluntary subscriptions. The election of officers for the ensuing year was postponed to an adjourned meeting to be held two weeks later.

Assistant Chemist Appointed.—Secretary Morton has appointed Dr. W. G. Brown, Professor of Chemistry in Washington and Lee University, Lexington, Va., First Assistant Chemist of the Division of Chemistry, Department of Agriculture, *vice* Dr. G. L. Spencer, resigned.

Training School for Missionaries.—The Washington Order of Deaconesses is extending its work, and now proposes to establish a home and training school in this city for nurses and workers in the missionary field. Articles of incorporation were recently filed by the members of the Society with this in view. The new organization will include the Lucy Webb Hayes Deaconess Home, the Sibley Hospital and the Nurses' Training School of the order. It will be known as the National Training School for Missionaries, and will be managed by the members of the Methodist Episcopal Church. The incorporators were Jannett C. Fisk, Elizabeth L. Rust, A. Lewis Clark, Jane Bancroft Robinson, W. G. McDowell, Hiram Price, Harry L. Roche, B. H. Stinemetz and John F. Hurst.

Marine-Hospital Services in Washington City.—Passed Assistant Surgeon H. D. Geddings, has been detailed to assist the Health Department during the continuance of smallpox in the District. Surgeon P. H. Bailhache, of the New York Marine-Hospital, has been detailed at Washington in connection with the same service, and has investigated the present outbreak and made a very careful report on the same to the Surgeon-General, whose personal representative he is. The Department has been using its large steam disinfecting chambers at the quarantine station under the direction of the local Health Department.

The Homeopathic Medical College in Court.—In the suit in equity filed Oct. 14, 1893, by the Washington Homeopathic Medical Society, asking for an injunction against the National Homeopathic Medical College, the plaintiff on the 9th inst., filed an amendment and supplemental bill.

After reciting the fact of the filing of the original bill the plaintiff states that the defendants were served with process, and although they made emphatic declarations through the public press of their desire to be heard, and to vindicate themselves, they have never answered the bill, and have sought to delay their answer by raising a technical objection to the form of the summons, insisting that the District of Columbia corporation is entitled to sixty days within which to answer, and the defendants have never made the slightest effort to bring the cause to a hearing.

In defiance of the outraged sentiment of all the reputable physicians of the District of Columbia, the bill goes on to say, the defendants, or one of them has during the past year pretended to conduct a homeopathic medical college in which they profess to give instruction in the science of medicine.

The plaintiff claims that the defendants have made no addition to their equipment nor any improvement in the *personnel* and standing of their so-called faculty; that they succeeded by unscrupulous advertisement in deluding into attendance some persons honestly desirous of obtaining a medical education; that in at least one case it has granted a diploma to a person who has actually studied medicine for not exceeding seven months in the alleged college; that in another case it has granted a diploma to a person who was forced out of a recognized and respectable medical school because of absolute inability to pass any examination, and that the defendants, for the purpose of attracting students, have continued to advertise, as members of the faculty, the names of physicians who had previously positively refused to be identified with the college or to allow their names to be used in connection with it.

The court is asked that the defendants, pending the suit and perpetually may be enjoined from conducting said alleged college.

Health of the District.—The report of the Health Office for the week ending November 3, is as follows:

Number of deaths (still-births not included:		
White	63	
Colored	62	
		125
Death rate per 1,000 per annum:		
White	16.8	
Colored	35.8	
Total		22.8
Death rate per 1,000 per annum for corresponding week last year		18.4
Still-births:		
White	5	
Colored	8	
Total		13.

New Orders from the Health Department.—The Commissioners, after a lengthy consultation with the Health Officer, approved the following order:

Whereas, Smallpox now exists in this District. I therefore direct that parents and guardians shall cause their children and wards to be successfully vaccinated or to be re-vaccinated, except in such cases as have been successfully vaccinated within five years from the date of this order, or as have been protected from infection by a previous attack of smallpox or varioloid.

The late Board of Health, in accordance with an Act entitled "An Act for the prevention of disease in the District of Columbia," passed by the Legislative Assembly of the District, and approved by the Governor June 19, 1872, made the following regulations, among others, in regard to smallpox, and on this the recent order is based:

"Parents and guardians shall cause their children and wards to be vaccinated before they attain the age of 2 years and re-vaccinated whenever the Board of Health shall, after five years from the last vaccination, require it.

"The Board of Health hereby orders and requires the vaccination of all the inhabitants in the District of Columbia, and, whenever, in their opinion, the public health demands it, the re-vaccination of all persons who do not furnish satis-

factory evidence that they have been successfully vaccinated within five years.

"All school trustees, school teachers or others having authority are forbidden to receive into or allow to attend any school, public or private, within the District of Columbia, any pupil not vaccinated, as required by the 'rules and regulations' heretofore made and promulgated by this Board."

The foregoing regulations were legalized by joint resolution of Congress, approved April 24, 1890, and again by an Act of Congress, approved Aug. 7, 1894, which Act provides "that the powers and duties imposed upon the late Board of Health in and by said ordinances are hereby conferred upon the Health Officer of the District."

The drafting of this order was the result of a complaint filled with the Commissioners a few days ago by a parent whose child had been declined re-admission to a public school because of a failure to be vaccinated. They also approved the following:

"That the aforesaid regulations shall apply to all cases of smallpox, varioloid or suspicious cases of disease not distinguished from the aforesaid diseases, provided that the flag or warning placard shall be displayed only upon such premises as are known to be infected with smallpox or varioloid."

SMALLPOX HOSPITAL.—All cases at the hospital are doing well and soon their final disposal will be considered. Dr. Benj. Bell has resigned the position of smallpox inspector, and Dr. L. Elliott has been appointed to fill the vacancy.

Hospital Notes.

THE MEDICO-CHIRURGICAL HOSPITAL of PHILADELPHIA.—During the month of October, 245 patients attended the eye department of this institution, and 1,225 visits were made by old patients. The prescriptions given for glasses numbered 135. Thirty operations were performed. In the ear department, ninety-five new patients were treated. Fifty-four applied to the throat department. Forty-eight new patients received treatment for nervous diseases and twenty-eight children were prescribed for in the children's department.

THE PUBLIC SERVICES.

Army Changes. Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from Nov. 3, 1894, to Nov. 9, 1894.

Capt. WALTER W. R. FISHER, Asst. Surgeon, will be relieved from duty at Ft. Columbus, N. Y. H., upon the expiration of his present leave of absence, and will report for duty at Ft. Meade, S. Dak., to relieve Capt. NORTON STRONG, Asst. Surgeon. Capt. STRONG, on being relieved by Capt. FISHER, is ordered to Ft. Sheridan, Ill., for duty at that post, relieving First Lieut. GEORGE J. NEWGARDEN, Asst. Surgeon. Lieut. NEWGARDEN, on being relieved by Capt. STRONG, is ordered to Ft. Wayne, Mich., for duty.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending Nov. 10, 1894.

P. A. Surgeon F. J. B. CORDEIRO, from U. S. S. "Adams," home, and granted two months' leave.

Asst. Surgeon L. H. STONE, ordered for examination preliminary to promotion.

Medical Director J. H. CLARKE, Medical Inspector C. H. WHITE, Surgeon T. H. STREETS, P. A. Surgeon A. C. H. RUSSELL, ordered as a Board at Naval Laboratory, Brooklyn, N. Y., to examine candidates for admission to the Medical Corps of the Navy, and for promotion in the Corps.

Marine-Hospital Changes.—Official list of changes of stations and duties of medical officers of the U. S. Marine-Hospital Service, for the six weeks ending Nov. 3, 1894.

Surgeon P. H. BAILHACHE, to report at Bureau for special temporary duty, Oct. 25, 1894.

Surgeon GEORGE PURVIANCE, granted leave of absence for five days each, Oct. 2, 1894, and Oct. 29, 1894.

Surgeon W. H. H. HUTTON, to proceed to Gulf Quarantine Station for temporary duty, Oct. 24, 1894.

Surgeon H. W. SAWTELLE, when relieved from duty at Boston, Mass., to proceed to New Orleans, La., for duty, Oct. 26, 1894.

Surgeon J. M. GASSAWAY, when relieved from duty at New Orleans, La., to proceed to Cairo, Ill., October 27, 1894.

Surgeon FAIRFAX IRWIN, to report at Bureau, Oct. 19, 1894.

Surgeon F. W. MEAD, to proceed to New York, N. Y., for temporary duty, Sept. 24, 1894.

P. A. Surgeon C. E. BANKS, to proceed to Bath, Maine, as inspector, Oct. 20, 1894. Granted leave of absence for three days, Nov. 3, 1894.

P. A. Surgeon C. T. PECKHAM, granted leave of absence for twenty-two days, Oct. 16, 1894.

P. A. Surgeon S. D. BROOKS, to proceed to Saginaw, Mich., as inspector, Oct. 26, 1894.

P. A. Surgeon W. P. MCINTOSH, granted leave of absence, Oct. 9, 1894.

P. A. Surgeon A. H. GLENNAN, granted leave of absence for two days, Sept. 29, 1894. Granted leave of absence for three days, Oct. 21, 1894.

P. A. Surgeon H. D. GEDDINGS, detailed for special duty, to assist the health authorities, District of Columbia, Oct. 27, 1894.

Asst. Surgeon C. H. GARDNER, to proceed to Angel Island Quarantine Station for temporary duty, Oct. 13, 1894.

Asst. Surgeon J. A. NYDEGGER, granted leave of absence for eighteen days, Sept. 24, 1894. Leave of absence extended three days, Oct. 17, 1894.

Asst. Surgeon W. J. S. STEWART, to proceed to Alexandria, Va., as inspector, Oct. 10, 1894. To proceed to Glymont, Md., for special duty, Oct. 29, 1894.

Asst. Surgeon EDGAR STRAYER, granted leave of absence for fourteen days, Oct. 24, 1894.

Asst. Surgeon RUPERT BLUE, granted leave of absence for three days, Nov. 3, 1894.

Asst. Surgeon SEATON NORMAN, to proceed to New York, N. Y., for temporary duty, Oct. 25, 1894. To rejoin station, Baltimore, Md., Nov. 2, 1894.

Asst. Surgeon E. K. SPRAGUE, granted leave of absence for thirty days, Oct. 10, 1894. When relieved from duty at Cairo, Ill., to proceed to Mobile, Ala., for duty, Oct. 29, 1894.

Asst. Surgeon A. R. THOMAS, to proceed to Cairo, Ill., for temporary duty, Oct. 5, 1894.

Asst. Surgeon J. B. GREENE, to proceed to New York, N. Y., for duty, Oct 27, 1894.

APPOINTMENT.

JOSEPH B. GREENE, of Alabama, commissioned by the President as an Asst. Surgeon, Oct. 24, 1894.

LETTERS RECEIVED.

Alden & Faxon, Cincinnati, Ohio; Antikamnia Chemical Co., St. Louis, Mo.; Atkinson, Wm. B., Philadelphia, Pa.

Battle & Co., St. Louis, Mo.; Booth, W. H., Utica, N. Y., (2).

Crittenton, C. N. Co., New York City; Christian, Jno. M., Washington, Ga.; Clement, W. R., Marquette, Kan.; Cook, Geo. F., Oxford, Ohio.

Dios Chemical Co., St. Louis, Mo.

Elmere, J. H., Iron Mountain, Mich.

Fuller, E. A., Kittrell, N. C.; Farnham, A. B., Minneapolis, Minn.

Garber, J. B., Dunkirk, Ind.; Guild, C. H. & Co., Boston, Mass.; Gamble, W. E., Chicago, Ill.

Hummel, A. L., Philadelphia, Pa., (2); Hubbard, Thomas, Toledo, Ohio; Haine, W. J., West Farmington, Ohio; Hooper, P. O., Little Rock, Ark., (2); Hay, Lyman T., Hot Springs, Ark.; Hill, A. S., Boston, Mass.

Kellogg, Geo. A., New York Ofty; Kennedy, T. C., Shelbyville, Ind.; Kiernan, Jas. G., Chicago, Ill.

McArthur Hypophosphite Co., Boston, Mass.; McKelveen, H. B., Cain, Iowa.; Mills, T. L., New Orleans, La.

Pierson, Wm., Onarga, N. J.

Still, Allen A., New York City; Stewart J. Clark, Minneapolis, Minn.; Slay Brothers, New York City.

The Sanitarium, Battle Creek, Mich.; Thomas, C. P., Everett, Wash.; Taylor, W. S., San Francisco, Cal.

Van Hovenberg, H., Kingston, N. Y.

Wilson, T. A., Keokuk, Iowa.

PAMPHLETS RECEIVED.

M. Stamm. Resection of the Kidney.

J. B. Murphy. Intestinal Approximation.

M. Stamm. Gastrostomy by a New Method.

Burnside Foster. Rational Medicine and Charlatanry.

Wm. B. Colby. Treatment of Inoperable Malignant Tumors with Toxins of Erysipelas and Bacillus Prodigiosus.

Wm. H. Wathen. Intraligamentous and Retroperitoneal Tumors of the Uterus and its Adnexa.

A. Jacobi. Stomatitis Neurotica Chronica.

A. Jacobi. The Production of Diseases by Sewer Air.

C. H. Alden, Asst. Surgeon-General, Washington, D. C. Special Training of the Medical Officer, with Brief Notes on Army Medical Schools at Home and Abroad.

W. Blair Stewart. Spindle-Cell Sarcoma and Epithelioma; A Report of Cases.

S. W. Abbott. Radical Differences in Methods of Production and Cultivation of Vaccine Lymph.

S. L. McCurdy. Old and Neglected Deformities following Infantile Spinal Paralysis.

Bayard Holmes. The Sources of the Defective, Dependent and Delinquent Classes.

D. Cerna. The Physiologic Actions of Alcohol.

D. H. Rand. Brief Report of Treatment, especially of Syphilis, at Genito-Urinary Clinic.

Wm. Fidler. Trephining the Skull in a Case of Idiocy.

D. Cerna. The Therapeutic Uses of Spartein.

J. O. De Courcy. Diseases of the Alimentary Canal. Treatment.

Drs. Beall, Walker and Capps. Fitness of the Climate of Texas for Operative Surgery, Demonstrated by Results in Recent Capital Cases.

N. A. Drake. Some of the Uses of Hot Water in Recent Injuries in Railway Surgery.

Howard Crutcher. Appendicitis; a Timely Operation.

J. B. Mattison. Morphinism in Medical Men.

J. B Mattison. The Modern and Humane Treatment of the Morphin Disease.

Geo. T. Vaughan. Hepatic Abscess.

F. Henrotin. Palliative Operations in the Treatment of Fibroid Tumors of the Uterus.

J. T. Jelks. Address to the "Honor Men" of the Barnes Medical College, St Louis, Mo.

Wm. F. Drewn. Some Remarks on Epilepsy, and the Care of Epileptics on the Colony Plan.

John Chalmers Da Costa. A Manual of Modern Surgery, General and Operative. Philadelphia: W. B. Saunders. Chicago: E. H. Colegrove & Co. Price, $2.50. (For review see this JOURNAL.)

Report on Typhoid Fever in the District of Columbia. Submitted by the Medical Society, etc. Washington, Government Printing Office.

Andrew J. McCosh. Excision of Cancer of the Rectum. (Reprint from the *New York Medical Journal*.) The Same: Iodoform Poisoning. (Reprinted from the *New York Polyclinic*.) The Same: Report of Four Cases of Brain Surgery. (Reprinted from the *American Journal Medical Sciences*.) The Same: Report of Three Cases of Gangrenous Hernia Subjected to Circular Enterorrhaphy. (Reprinted from *Annals of Surgery*.)

W. B. Outten. A Case of Gastrolith. (Reprinted from the *Medical Fortnightly*.)

Erratum.—In the first of the series of reports from the Chicago Academy of Medicine, it was stated that DR. HENROTIN presided, when it should have been stated that DR. CUTHBERTSON presided.